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yathra

HANDS ON LAB - MATERIAL

Introduction

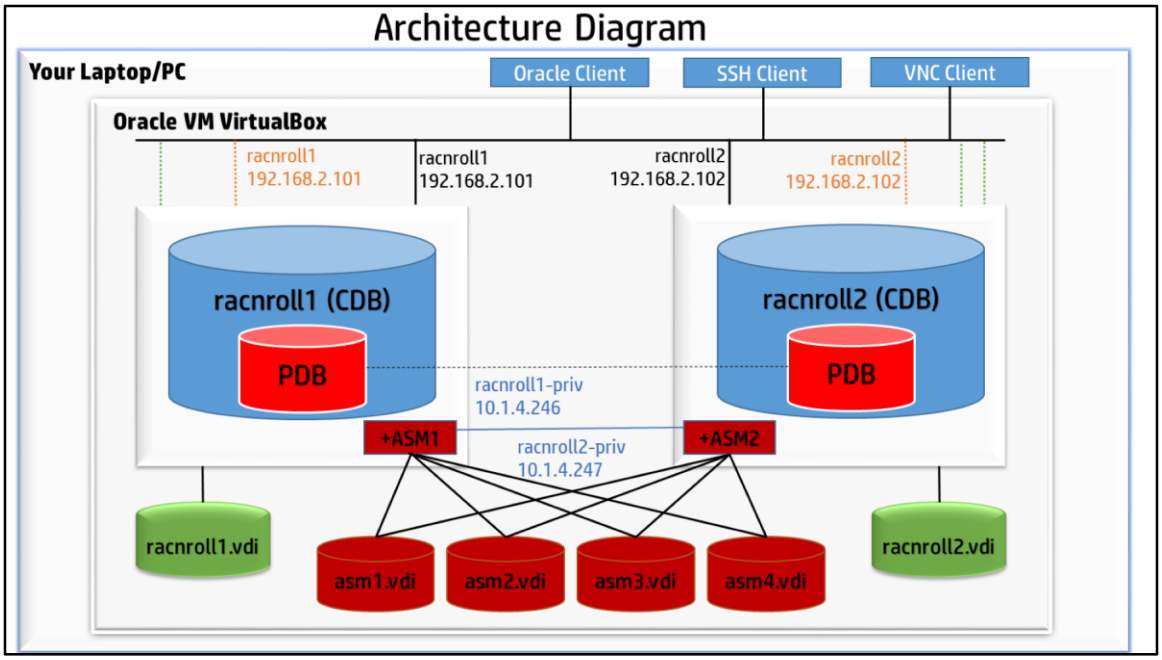
One of the major challenges of setting up an Oracle RAC environment is to have a shared storage, network setup and at least two instances which are very expensive and would be hard to setup at home and learn. Oracle VM has made this easier, using the Oracle VM VirtualBox which is a free software from Oracle you can have multiple instances with Shared storage and various types of network setup to have an easy implementation of a RAC cluster.

Takeaways from this RAC 'n' ROLL Hands on Lab (HOL) session

Installation & Configuration of

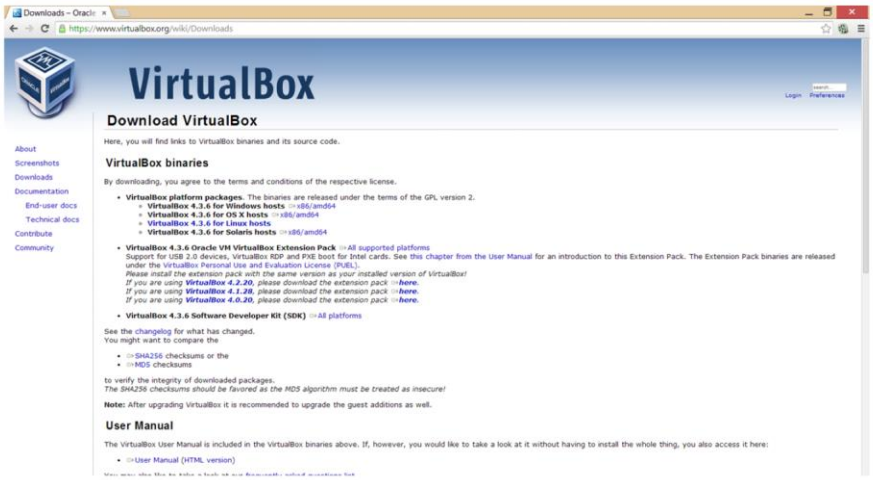
1. Oracle VM VirtualBox
2. Oracle Enterprise Linux 6.5
3. Oracle 12c Grid infrastructure
4. Oracle RAC 12c Database

Note: RAC setup using Oracle VM Box setup is good for development, test and training environments. They are not suitable for production.


Architecture Diagram
Your Laptop/PC
Oracle Client
SSH Client
VNC Client
Oracle VM VirtualBox
racnroll1
192.168.2.101
racnroll1
192.168.2.101
racnroll2
192.168.2.102
racnroll2
192.168.2.102
racnroll1 (CDB)
PDB
racnroll2 (CDB)
PDB
racnroll1-priv
10.1.4.246
racnroll2-priv
10.1.4.247
+ASM1
+ASM2
racnroll1.vdi
asm1.vdi
asm2.vdi
asm3.vdi
asm4.vdi
racnroll2.vdi

Required Software Downloads

Oracle VM VirtualBox - Download


Downloads – Oracle
https://www.virtualbox.org/wiki/Downloads
VirtualBox
Download VirtualBox
About
Screenshots
Downloads
Documentation
End-user docs
Technical docs
Contribute
Community
Here, you will find links to VirtualBox binaries and its source code.
VirtualBox binaries
By downloading, you agree to the terms and conditions of the respective license.
VirtualBox platform packages. The binaries are released under the terms of the GPL version 2.
VirtualBox 4.3.6 for Windows hosts x86/amd64
VirtualBox 4.3.6 for OS X hosts x86/amd64
VirtualBox 4.3.6 for Linux hosts
VirtualBox 4.3.6 for Solaris hosts x86/amd64
VirtualBox 4.3.6 Oracle VM VirtualBox Extension Pack All supported platforms
Support for USB 2.0 devices, VirtualBox RDP and PXE boot for Intel cards. See this chapter from the User Manual for an introduction to this Extension Pack. The Extension Pack binaries are released under the VirtualBox Personal Use and Evaluation License (PUEL).
Please install the extension pack with the same version as your installed version of VirtualBox!
If you are using VirtualBox 4.2.20, please download the extension pack here.
If you are using VirtualBox 4.1.28, please download the extension pack here.
If you are using VirtualBox 4.0.20, please download the extension pack here.
VirtualBox 4.3.6 Software Developer Kit (SDK) All platforms
See the changelog for what has changed.
You might want to compare the
SHA256 checksums or the
MD5 checksums
to verify the integrity of downloaded packages.
The SHA256 checksums should be favored as the MD5 algorithm must be treated as insecure!
Note: After upgrading VirtualBox it is recommended to upgrade the guest additions as well.
User Manual
The VirtualBox User Manual is included in the VirtualBox binaries above. If, however, you would like to take a look at it without having to install the whole thing, you also access it here:
User Manual (HTML version)

Oracle VM VirtualBox – Download

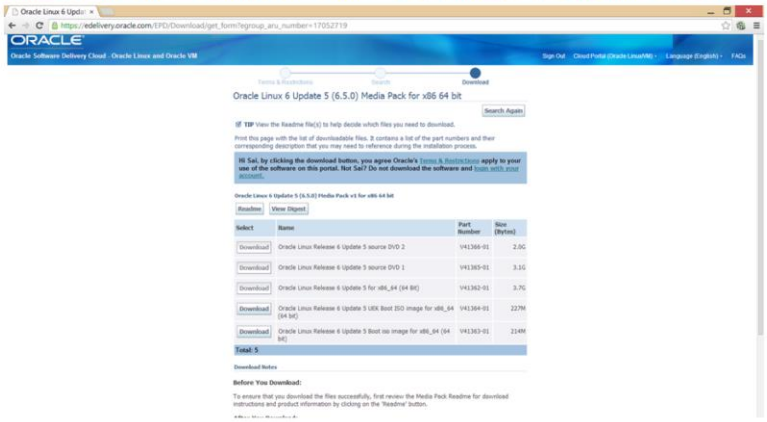
VirtualBox is a powerful x86 and AMD64/Intel64 virtualization product for enterprise as well as home use. Not only is VirtualBox an extremely feature rich, high performance product for enterprise customers, it is also the only professional solution that is freely available as Open Source Software under the terms of the GNU General Public License (GPL) version 2. See "About VirtualBox" for an introduction.

Download latest versions:

1. VirtualBox 4.3.6 for Windows hosts x86/amd64
2. VirtualBox 4.3.6 Oracle VM VirtualBox Extension Pack All supported platforms

Oracle Linux 6 Update 5 (6.5.0) Media Pack for x86 64 bit - Download

https://edelivery.oracle.com/EPD/Download/get_form?egroup_aru_number=17052719



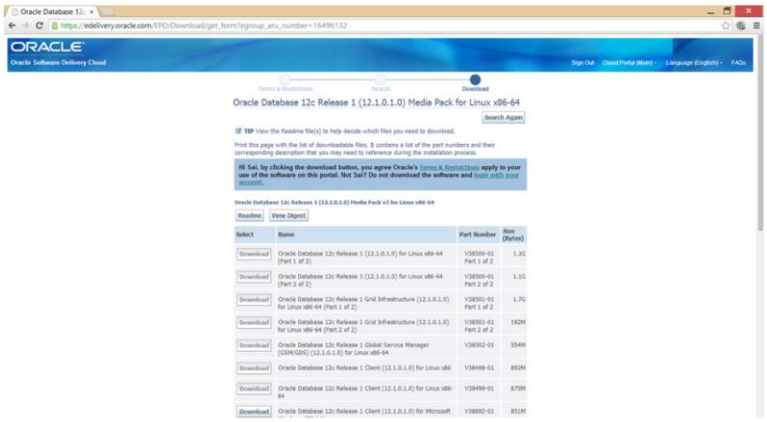
Oracle Linux 6 Update 5 (6.5.0) Media Pack for x86 64 bit – Download

Download following .iso file from https://edelivery.oracle.com/EPD/Download/get_form?egroup_aru_number=17052719

Oracle Linux Release 6 Update 5 for x86_64 (64 Bit) V41362-01 3.7G

Oracle Database 12c Release 1 (12.1.0.1.0) Media Pack for Linux x86-64 -Download

https://edelivery.oracle.com/EPD/Download/get_form?egroup_aru_number=16496132



Oracle Database 12c Release 1 (12.1.0.1.0) Media Pack for Linux x86-64 –Download

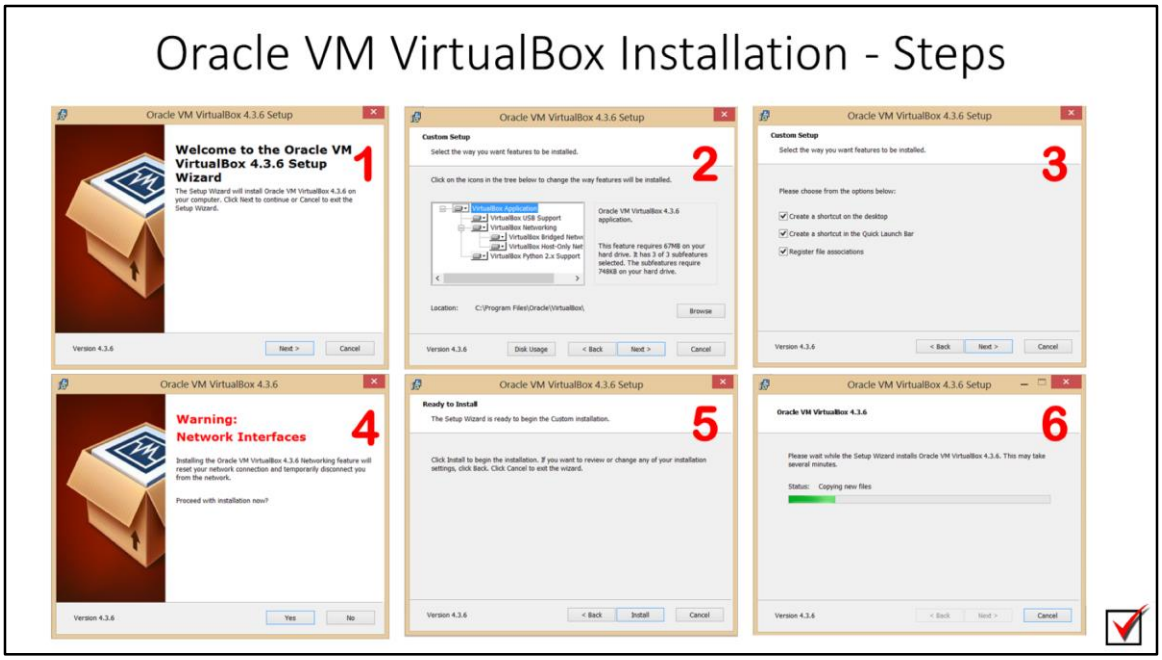
Download Oracle Database 12c Release 1 (12.1.0.1.0) Media Pack for Linux x86-64 from edelivery.oracle.com
https://edelivery.oracle.com/EPD/Download/get_form?egroup_aru_number=16496132

Download only following files.

1. Oracle Database 12c Release 1 (12.1.0.1.0) for Linux x86-64 (Part 1 of 2)V38500-01 Part 1 of 21.3G
2. Oracle Database 12c Release 1 (12.1.0.1.0) for Linux x86-64 (Part 2 of 2)V38500-01 Part 2 of 21.1G
3. Oracle Database 12c Release 1 Grid Infrastructure (12.1.0.1.0) for Linux x86-64 (Part 1 of 2)V38501-01 Part 1 of 21.7G
4. Oracle Database 12c Release 1 Grid Infrastructure (12.1.0.1.0) for Linux x86-64 (Part 2 of 2)V38501-01 Part 2 of 2192M

- Follow the exact steps as per document & Do not change anything for the first time.
- Double check before proceeding to next step.

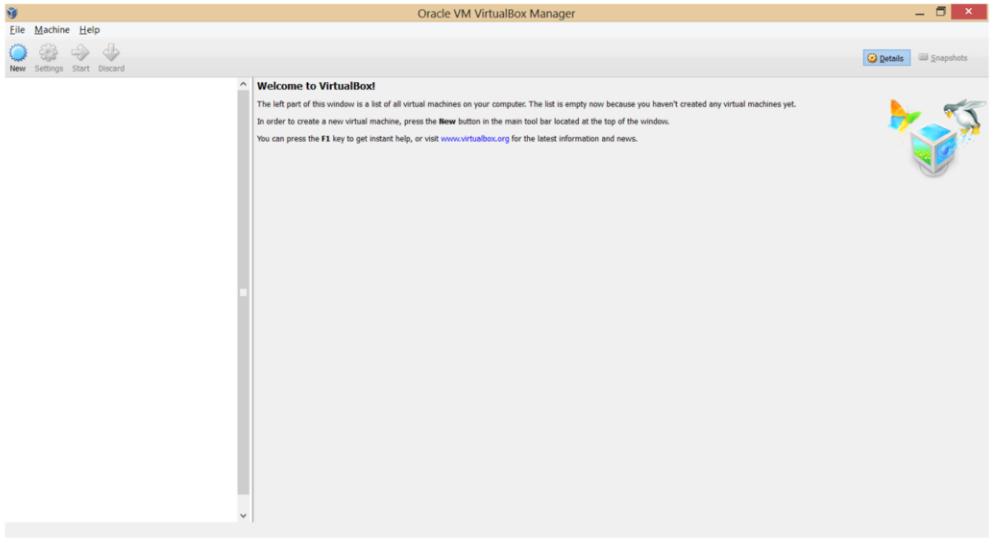
Oracle VM VirtualBox Installation


Oracle VM VirtualBox Installation - Steps
Oracle VM VirtualBox 4.3.6 Setup
Welcome to the Oracle VM VirtualBox 4.3.6 Setup Wizard
1
Oracle VM VirtualBox 4.3.6 Setup
Custom Setup
Select the way you want features to be installed.
Click on the icons in the tree below to change the way features will be installed.
2
Oracle VM VirtualBox 4.3.6 Setup
Custom Setup
Select the way you want features to be installed.
Please choose from the options below:
Create a shortcut on the desktop
Create a shortcut in the Quick Launch Bar
Register file associations
3
Oracle VM VirtualBox 4.3.6
Warning:
Network Interfaces
4
Oracle VM VirtualBox 4.3.6 Setup
Ready to Install
The Setup Wizard is ready to begin the Custom installation.
5
Oracle VM VirtualBox 4.3.6 Setup
Oracle VM VirtualBox 4.3.6
6

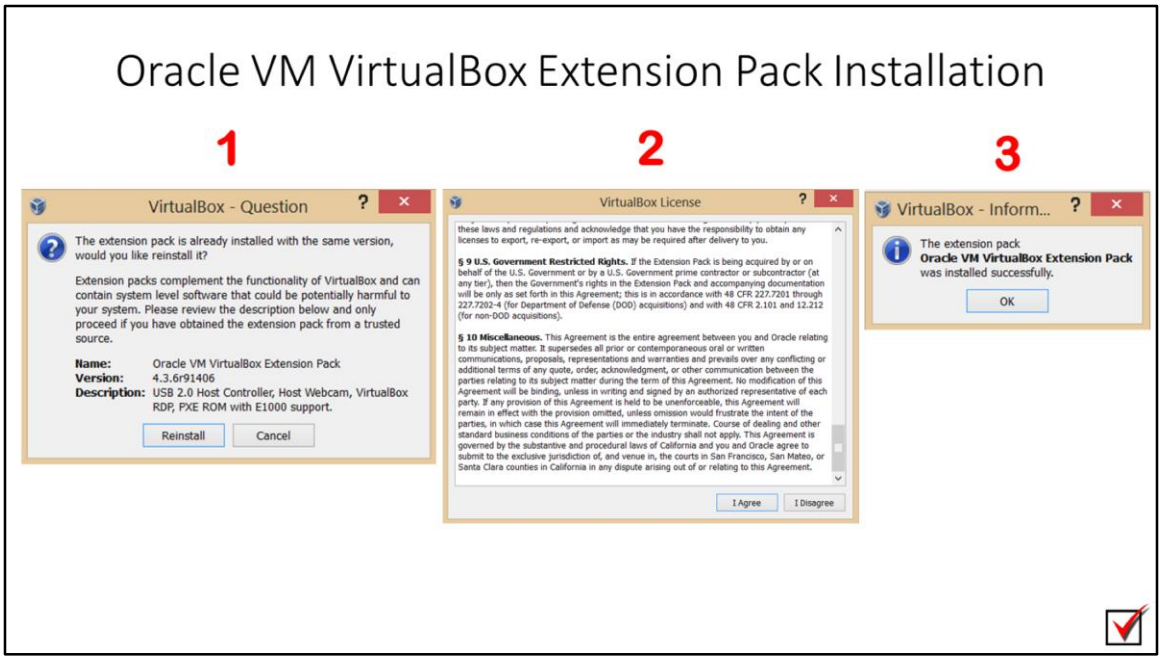
Oracle VM VirtualBox Installation - Steps

1. Double click on “VirtualBox-4.3.6-91406-Win.exe”
2. Choose location – go with default location
3. Choose appropriate options
4. Press “Yes” to continue
5. Press “Install” to continue
6. Installation is in progress

Oracle VM VirtualBox - Ready


Oracle VM VirtualBox Manager
File Machine Help
New Settings Start Discard
Details Snapshots
Welcome to VirtualBox!
The left part of this window is a list of all virtual machines on your computer. The list is empty now because you haven't created any virtual machines yet.
In order to create a new virtual machine, press the New button in the main tool bar located at the top of the window.
You can press the F1 key to get instant help, or visit www.virtualbox.org for the latest information and news.

Oracle VM VirtualBox is ready to use. Oracle VM VirtualBox Manager home page.


Oracle VM VirtualBox Extension Pack Installation
1
2
3
VirtualBox - Question
The extension pack is already installed with the same version, would you like reinstall it?
Extension packs complement the functionality of VirtualBox and can contain system level software that could be potentially harmful to your system. Please review the description below and only proceed if you have obtained the extension pack from a trusted source.
Name: Oracle VM VirtualBox Extension Pack
Version: 4.3.6r91406
Description: USB 2.0 Host Controller, Host Webcam, VirtualBox RDP, PXE ROM with E1000 support.
Reinstall
Cancel
VirtualBox License
I Agree
I Disagree
VirtualBox - Inform...
The extension pack
Oracle VM VirtualBox Extension Pack
was installed successfully.
OK

Oracle VM VirtualBox Extension Pack Installation

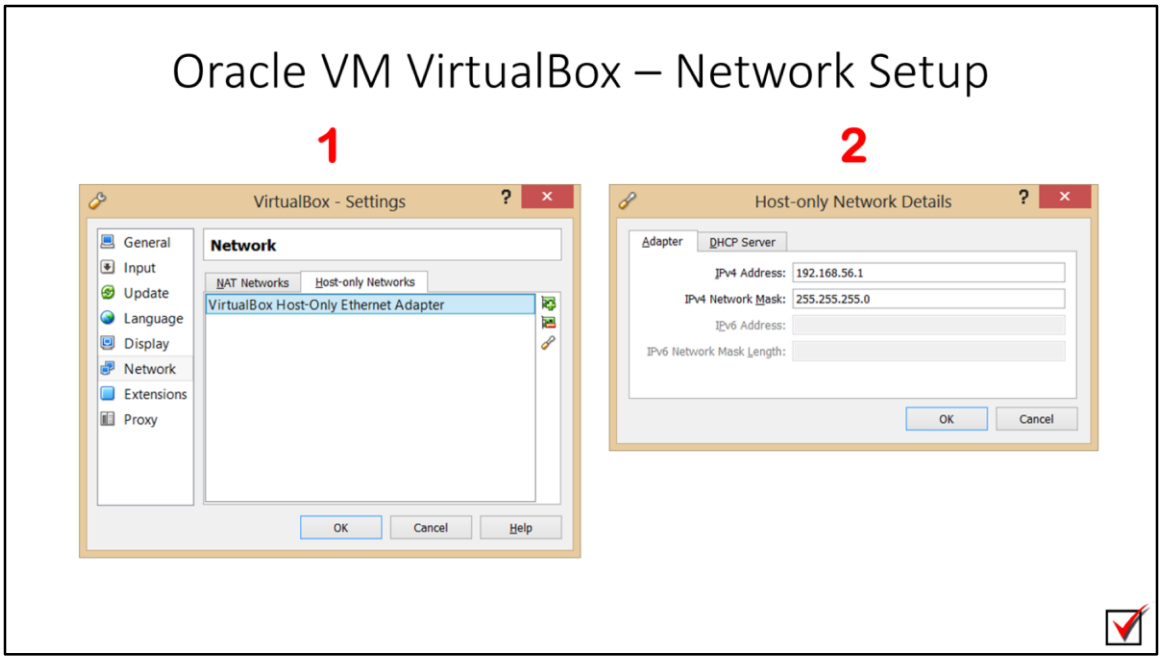
1. Double click on “Oracle_VM_VirtualBox_Extension_Pack-4.3.6-91406.vbox-extpack”.
2. Select “I Agree” by scrolling down the side bar.
3. Press “OK” to complete.

For your knowledge:

Additional extension packs can be downloaded which extend the functionality of the VirtualBox base package. Currently, Oracle provides the one extension pack, provides the following added functionality:

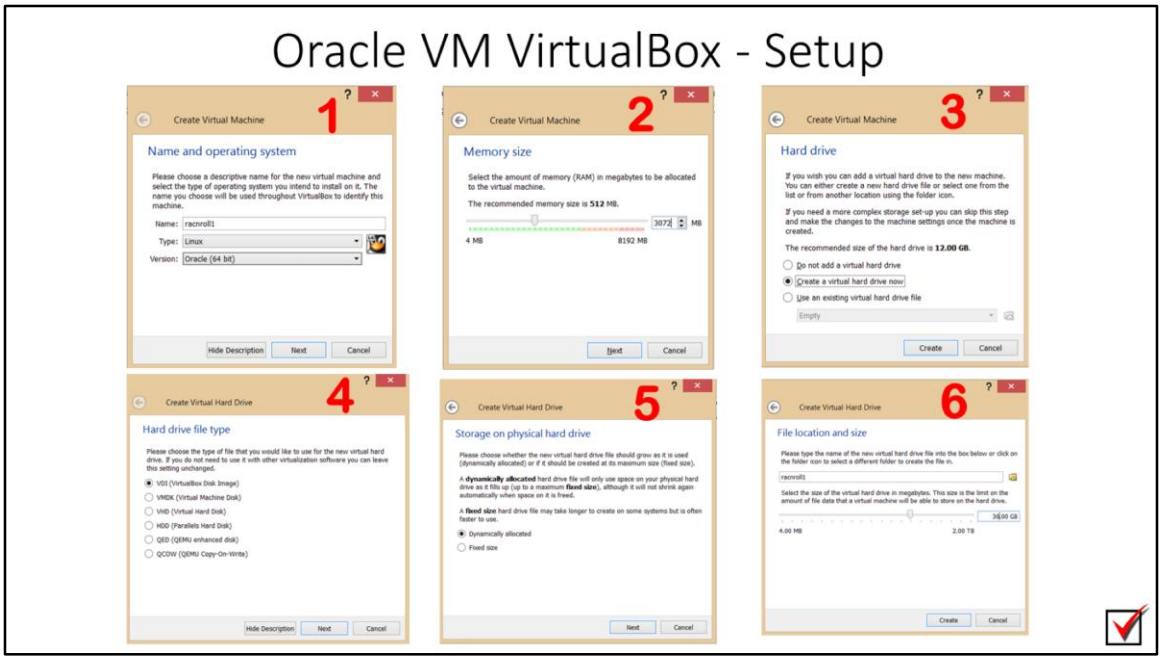
- The virtual USB 2.0 (EHCI) device
- VirtualBox Remote Desktop Protocol (VRDP) support
- Host webcam pass-through
- Intel PXE boot ROM.
- Experimental support for PCI pass-through on Linux hosts

For more details, please check User Manual.



Oracle VM VirtualBox – Network Setup

1. Go to “File” > “Preferences” > “network” > Click “Host-only Networks” > Press “Plus” symbol, this will add VirtualBox Host-Only Ethernet Adapter.
2. Double click or press edit symbol to edit appropriate values or you can leave default values.


Oracle VM VirtualBox - Setup
1
Create Virtual Machine
Name and operating system
Please choose a descriptive name for the new virtual machine and select the type of operating system you intend to install on it. The name you choose will be used throughout VirtualBox to identify this machine.
Name: racnroll1
Type: Linux
Version: Oracle (64 bit)
Hide Description
Next
Cancel
2
Create Virtual Machine
Memory size
Select the amount of memory (RAM) in megabytes to be allocated to the virtual machine.
The recommended memory size is 512 MB.
3072 MB
4 MB
8192 MB
Next
Cancel
3
Create Virtual Machine
Hard drive
If you wish you can add a virtual hard drive to the new machine. You can either create a new hard drive file or select one from the list or from another location using the folder icon.
If you need a more complex storage set-up you can skip this step and make the changes to the machine settings once the machine is created.
The recommended size of the hard drive is 12.00 GB.
Do not add a virtual hard drive
Create a virtual hard drive now
Use an existing virtual hard drive file
Empty
Create
Cancel
4
Create Virtual Hard Drive
Hard drive file type
Please choose the type of file that you would like to use for the new virtual hard drive. If you do not need to use it with other virtualization software you can leave this setting unchanged.
VDI (VirtualBox Disk Image)
VMDK (Virtual Machine Disk)
VHD (Virtual Hard Disk)
HDD (Parallels Hard Disk)
QED (QEMU enhanced disk)
QCOW (QEMU Copy-On-Write)
Hide Description
Next
Cancel
5
Create Virtual Hard Drive
Storage on physical hard drive
Please choose whether the new virtual hard drive file should grow as it is used (dynamically allocated) or if it should be created at its maximum size (fixed size).
A dynamically allocated hard drive file will only use space on your physical hard drive as it fills up (up to a maximum fixed size), although it will not shrink again automatically when space on it is freed.
A fixed size hard drive file may take longer to create on some systems but is often faster to use.
Dynamically allocated
Fixed size
Next
Cancel
6
Create Virtual Hard Drive
File location and size
Please type the name of the new virtual hard drive file into the box below or click on the folder icon to select a different folder to create the file in.
racnroll1
Select the size of the virtual hard drive in megabytes. This size is the limit on the amount of file data that a virtual machine will be able to store on the hard drive.
30.00 GB
4.00 MB
2.00 TB
Create
Cancel

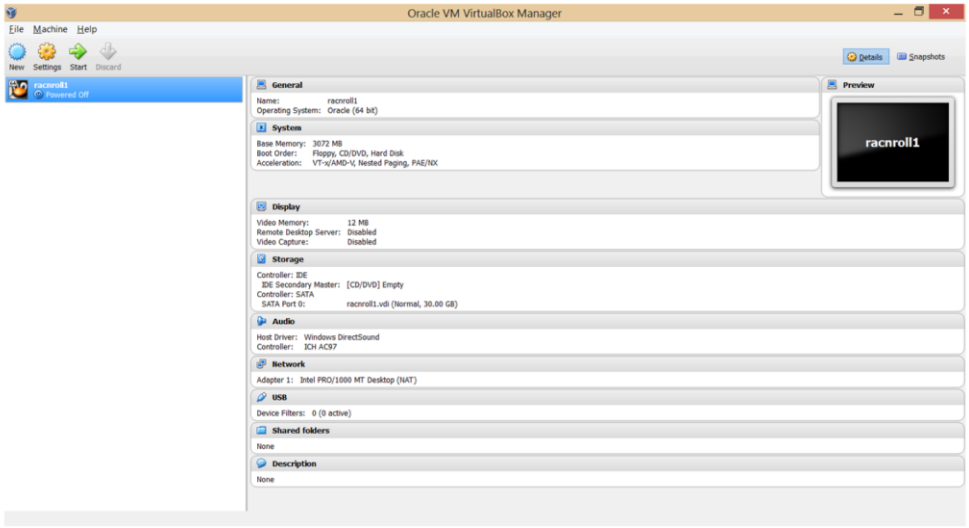
Oracle VM VirtualBox – Setup

1. Provide Virtual Machine name – racnroll1, Select type as “Linux” and Version as “Oracle(64 bit)
2. Provide at least 3G memory i.e. 3072 and click “Next”
3. Choose “Create a virtual hard drive now” and click on “Create” to proceed
4. Choose “VDI (Virtual Disk Image) – default option
5. Choose “Dynamically allocated” and Click on “Next”
6. Allocate at least 30GB and Click on “Create”

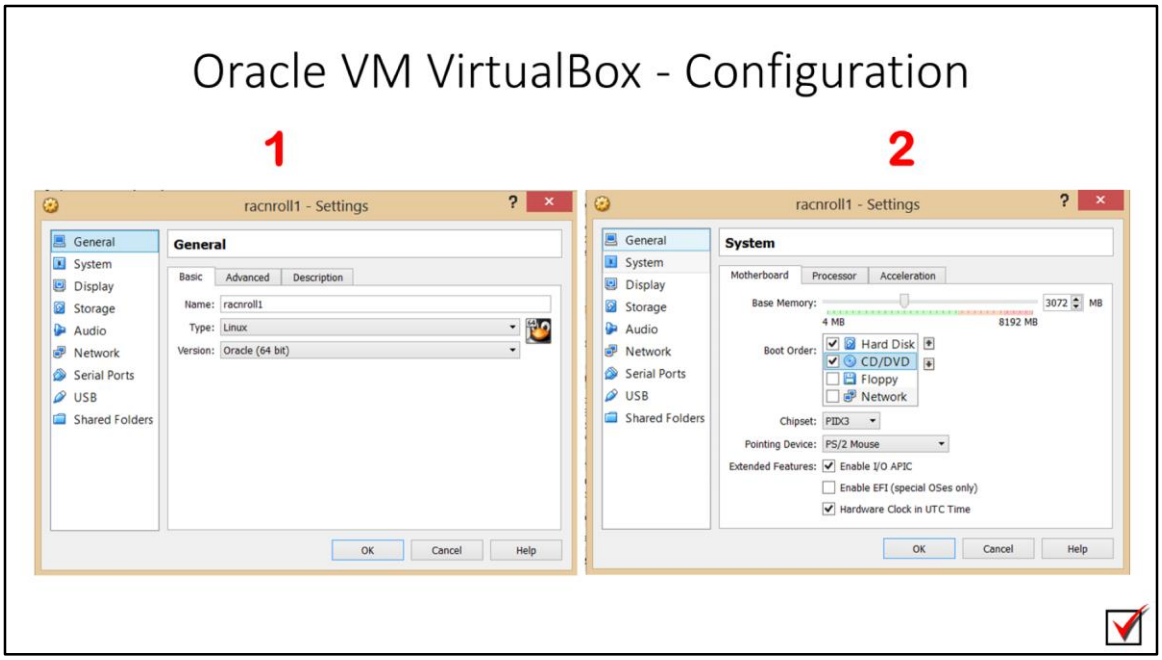
For your Knowledge:

Disk image files reside on the host system and are seen by the guest systems as hard disks of a certain geometry. When a guest operating system reads from or writes to a hard disk, VirtualBox redirects the request to the image file. Like a physical disk, a virtual disk has a size (capacity), which must be specified when the image file is created.

Oracle VM VirtualBox - Setup



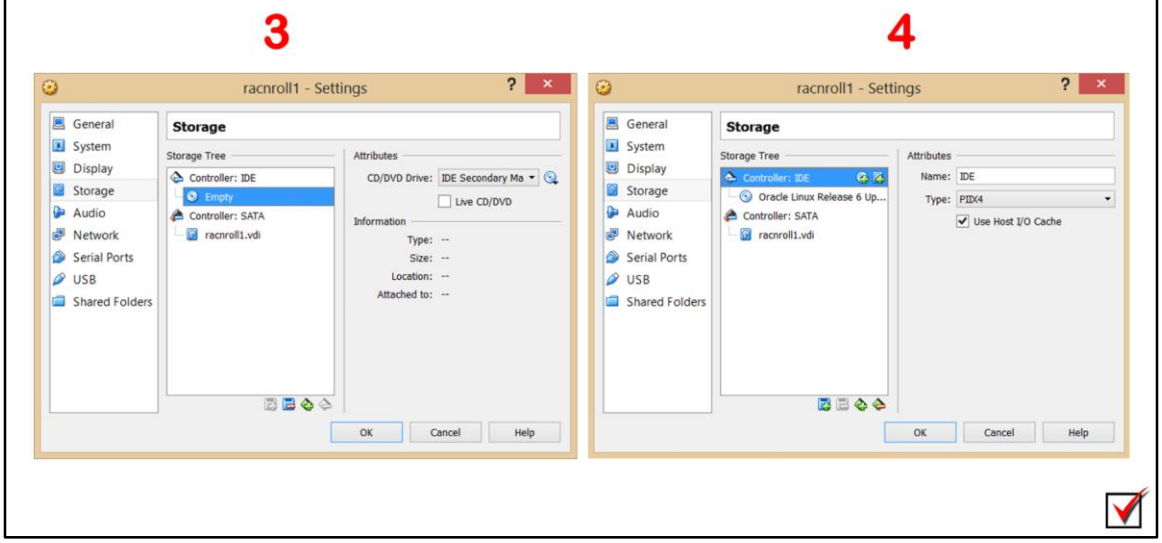
At this point you can see “racnroll1” VM from Oracle VM VirtualBox Manager.



Oracle VM VirtualBox – Configuration – Steps:

1. Go to “racnroll1” VM Settings
2. Click on “System” and Move “Hard Disk” option to top boot order and “CD/DVD” as second boot order and remove tick from “Floppy”

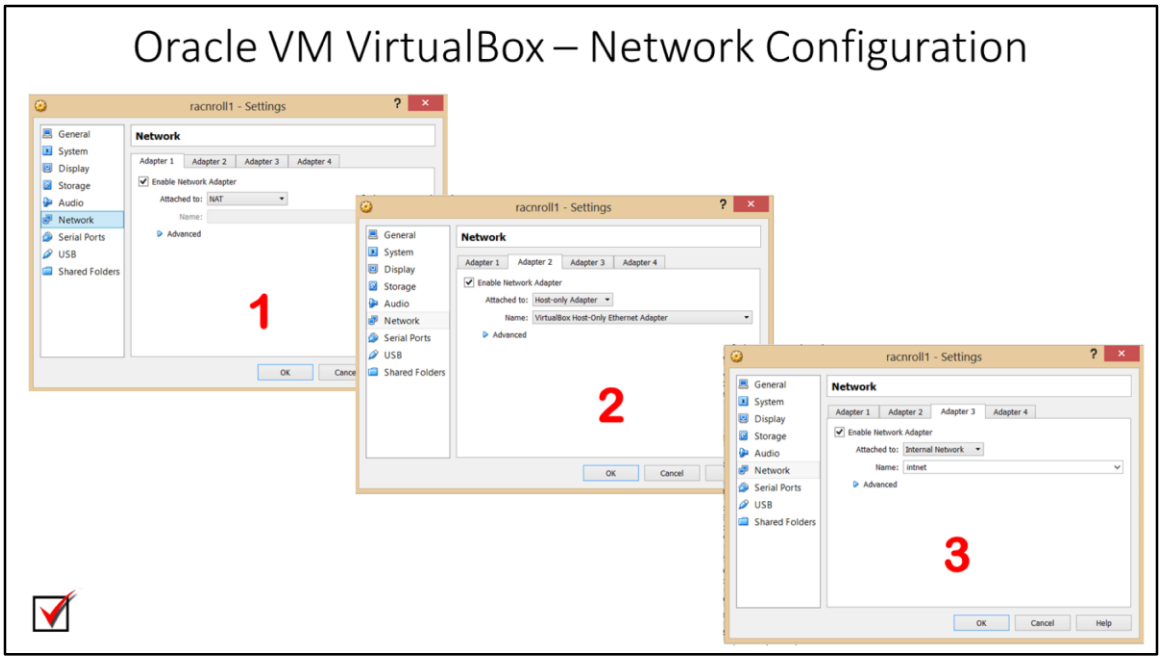
Oracle VM VirtualBox - Configuration



Oracle VM VirtualBox – Configuration – Steps:

3. Go to “racnroll1” VM Settings

4. Click on Storage. Remove “Empty” from Controller: IDE by selecting “-” (Minus) symbol. Add operating system iso file “Oracle Linux Release 6 Update 5 for x86_64 (64 Bit)-V41362-01.iso” by selecting “+” (Plus) symbol



Oracle VM VirtualBox – Networking Configuration Steps:

Go to "racnroll1" VM Settings, Click on Network

1. Select "Adapter 1" and Click on "Enable Network Adapter" and Select "NAT" as Attached to
2. Select "Adapter 2" and Click on "Enable Network Adapter" and Select "Host-Only Adapter" as Attached to
3. Select "Adapter 1" and Click on "Enable Network Adapter" and Select "Internal Network" as Attached to

Click on "OK"

<u>For your Knowledge:</u>

Network Address Translation (NAT)
Network Address Translation (NAT) is the simplest way of accessing an external network from a virtual machine. Usually, it does not require any configuration on the host network and guest system. For this reason, it is the default networking mode in

VirtualBox.

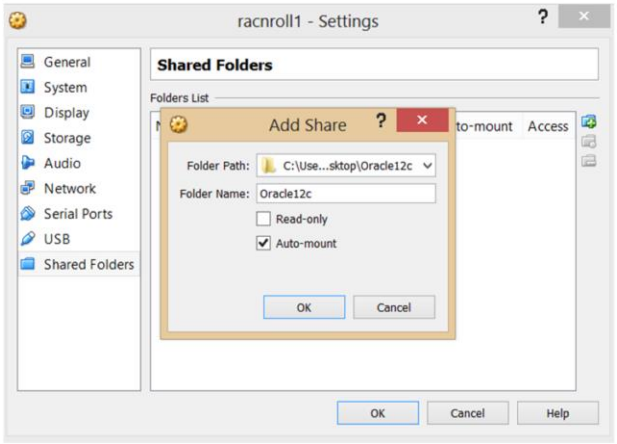
A virtual machine with NAT enabled acts much like a real computer that connects to the Internet through a router. The "router", in this case, is the VirtualBox networking engine, which maps traffic from and to the virtual machine transparently. In VirtualBox this router is placed between each virtual machine and the host.

Host-only networking
Host-only networking is particularly useful for preconfigured virtual appliances, where multiple virtual machines are shipped together and designed to cooperate. For example, one virtual machine may contain a web server and a second one a database, and since they are intended to talk to each other, the appliance can instruct VirtualBox to set up a host-only network for the two. A second (bridged) network would then connect the web server to the outside world to serve data to, but the outside world cannot connect to the database.

Internal networking
In this Networking model, the VM can directly communicate with the outside world. However, the "outside world" is limited to other VMs on the same host which connect to the same internal network.

For more details - https://www.virtualbox.org/manual/ch06.html

Oracle VM VirtualBox – Shared Folder Configuration



Oracle VM VirtualBox – Networking Configuration Steps:

1. Go to “racnroll1” VM Settings
2. Click on “Shared Folders”
3. Add appropriate “Folder Path”
4. Choose “Folder Name” – Optional (Name will appear automatically)
5. Select “Auto-mount” option
6. Press Ok

For your Knowledge:

With the "shared folders" feature of VirtualBox, you can access files of your host system from within the guest system. This is similar how you would use network shares in Windows networks -- except that shared folders do not need require networking, only the Guest Additions. Shared Folders are supported with Windows (2000 or newer), Linux and Solaris guests.

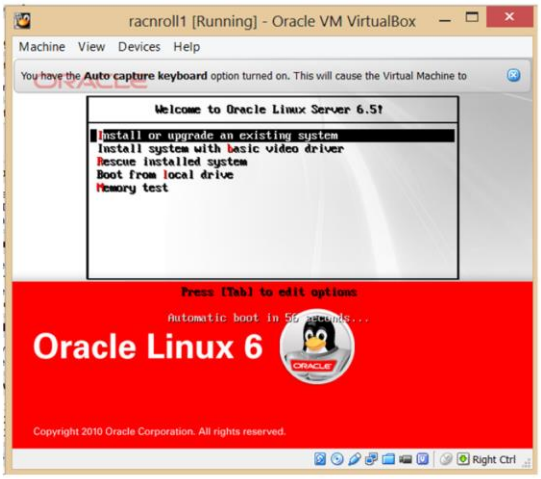
Shared folders must physically reside on the *host* and are then shared with the guest, which uses a special file system driver in the Guest Addition to talk to the host. For Windows guests, shared folders are implemented as a pseudo-network redirector; for

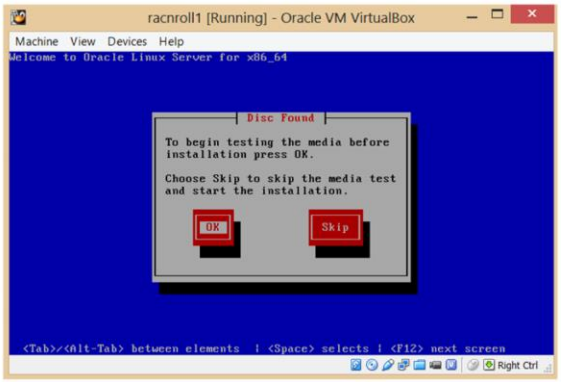
Linux and Solaris guests, the Guest Additions provide a virtual file system.

To share a host folder with a virtual machine in VirtualBox, you must specify the path of that folder and choose for it a "share name" that the guest can use to access it. Hence, first create the shared folder on the host; then, within the guest, connect to it.

Oracle Linux Release 6 Update 5 Installation

Oracle Linux Release 6 Update 5 Installation

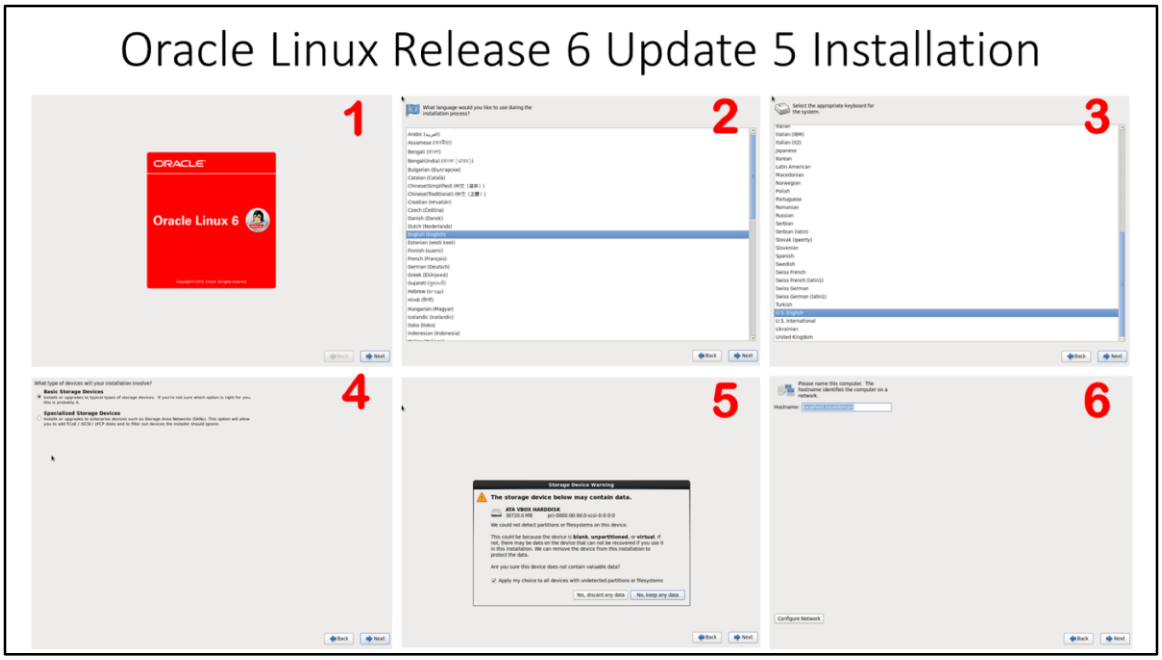

racnroll1 [Running] - Oracle VM VirtualBox
Machine View Devices Help
You have the Auto capture keyboard option turned on. This will cause the Virtual Machine to
Welcome to Oracle Linux Server 6.5!
Install or upgrade an existing system
Install system with basic video driver
Rescue installed system
Boot from local drive
Memory test
Press [Tab] to edit options
Automatic boot in 59 seconds...
Oracle Linux 6
Copyright 2010 Oracle Corporation. All rights reserved.
Right Ctrl


racnroll1 [Running] - Oracle VM VirtualBox
Machine View Devices Help
Welcome to Oracle Linux Server for x86_64
Disc Found
To begin testing the media before installation press OK.
Choose Skip to skip the media test and start the installation.
OK
Skip
<Tab>/<Alt-Tab> between elements ; <Space> selects ; <F12> next screen
Right Ctrl

Oracle Linux Release 6 Update 5 Installation

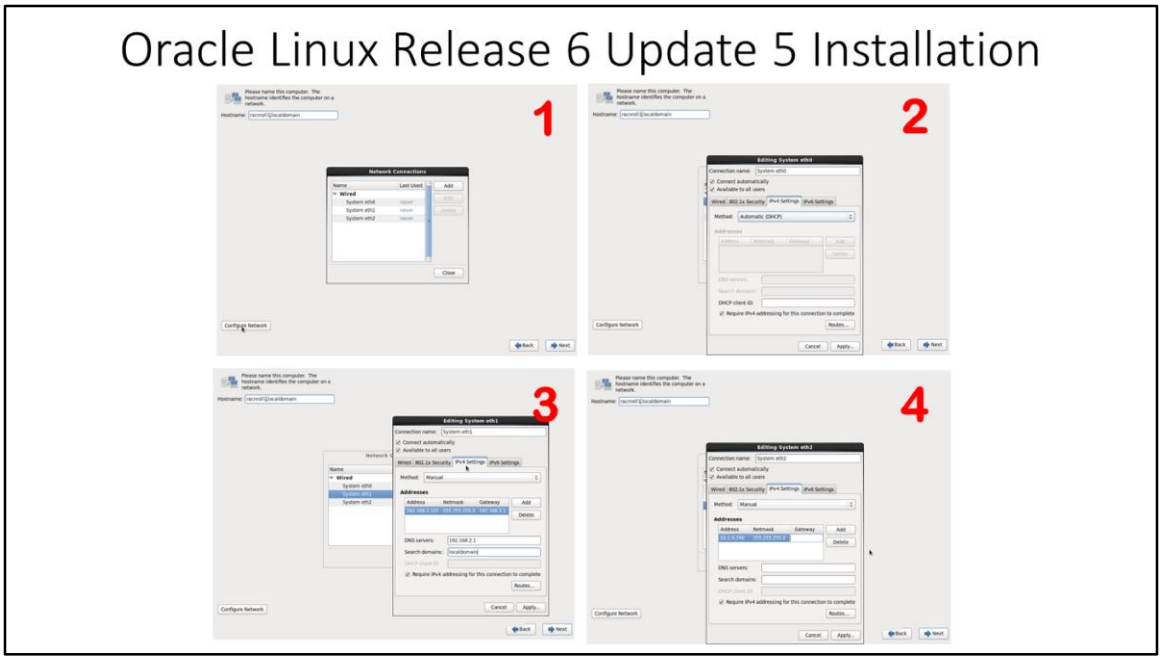
1. Press enter to continue to next screen
2. Select “Skip” option (Use Keyboard)

Note: If you see some pop-up windows, ignore and close the windows.



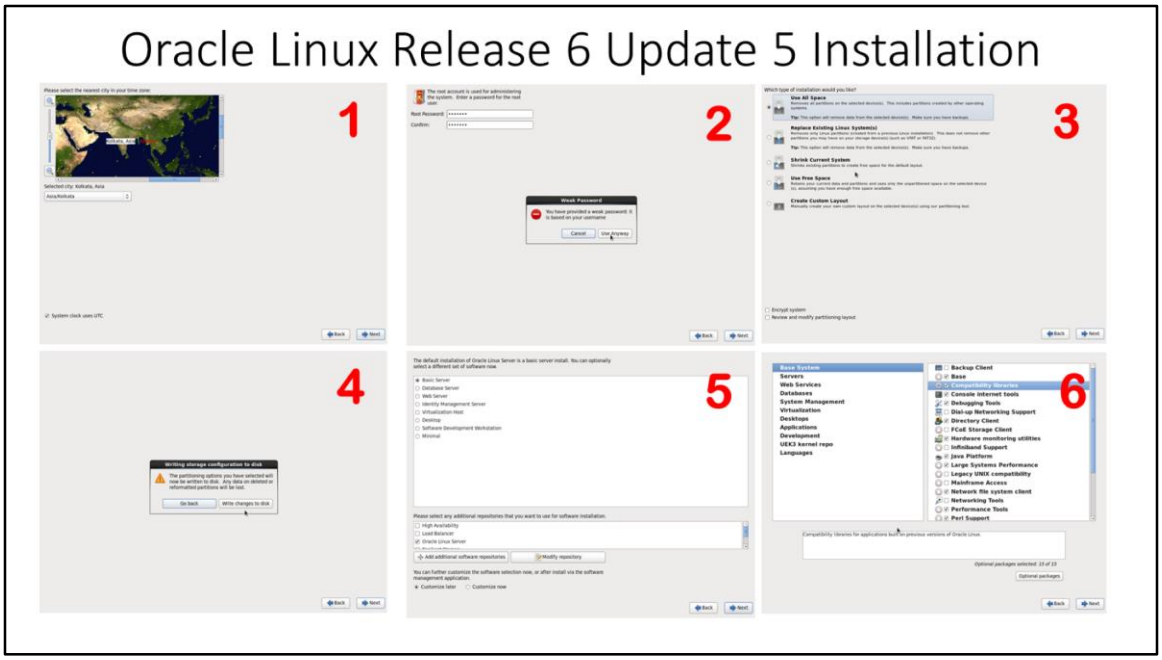
Oracle Linux Release 6 Update 5 Installation

1. Click on “Next”
2. Select appropriate language – English(English) – Default Option
3. Select US English – Default Option
4. Select “Base Storage Devices” – Default Option
5. Select “Yes, Discard any data” and click “Next”
6. Change the hostname to – “racnroll1.localdomain”



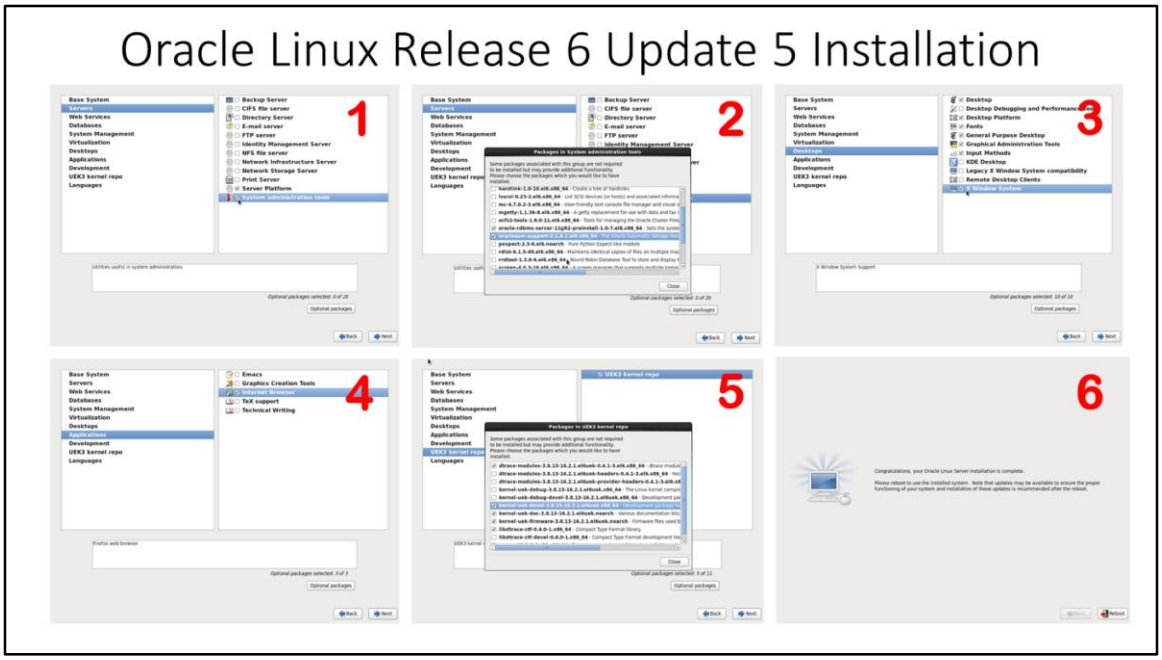
Oracle Linux Release 6 Update 5 Installation

1. Click on “Configure Network”
2. Edit “System eth0”, select “Connect automatically”, go to “IPV4 Settings” , select “Method” as “Automatic (DHCP)” and Apply close the window.
3. Edit “System eth1”, select “Connect automatically”, go to “IPV4 Settings” , select “Method” as “Manual”, Address – 192.168.2.101, Netmask – 255.255.255.0 Gateway – 192.168.2.1, DNS Server – 192.168.2.1, Search domain – localdomain and Apply close the window.
4. Edit “System eth2”, select “Connect automatically”, go to “IPV4 Settings” , select “Method” as “Manual”, Address – 10.1.4.246, Netmask – 255.255.255.0 Gateway – blank , DNS Server – blank, Search domain – blank and Apply close the window.



Oracle Linux Release 6 Update 5 Installation

1. Choose appropriate time zone from the map eg. Kolkata, Asia
2. Set root password – in this lab root password is “root123”, Since it is not strong password, you can press “use anyway”
3. Select “Use All Space” option and Click “Next”
4. Select “Write Changes to dicks” and Click “Next”
5. Select “Customize Now” and Click “Next”
6. Choose following package groups.
   - Base System > Base
   - Base System > Compatibility libraries
   - Base System > Hardware monitoring utilities
   - Base System > Large Systems Performance
   - Base System > Network file system client
   - Base System > Performance Tools
   - Base System > Perl Support

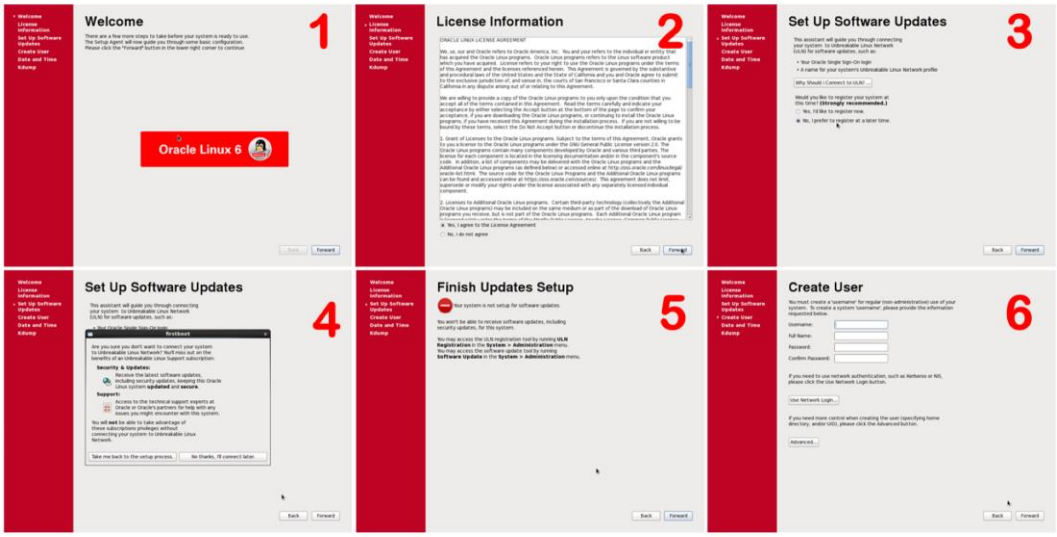


Oracle Linux Release 6 Update 5 Installation

1. Choose following package groups
   Servers > Server Platform
   Servers > System administration tools
2. Servers > System administration tools > Click on “optional packages” > select packages as per screenshot -2
3. Choose following package groups
   Desktops > Desktop
   Desktops > Desktop Platform
   Desktops > Fonts
   Desktops > General Purpose Desktop
   Desktops > Graphical Administration Tools
   Desktops > Input Methods
   Desktops > X Window System
4. Choose following package groups
   Applications > Internet Browser
   Development > Additional Development
   Development > Development Tools
5. Select the optional package under “ UEK3 kernel repo” and select “kernel-uek-

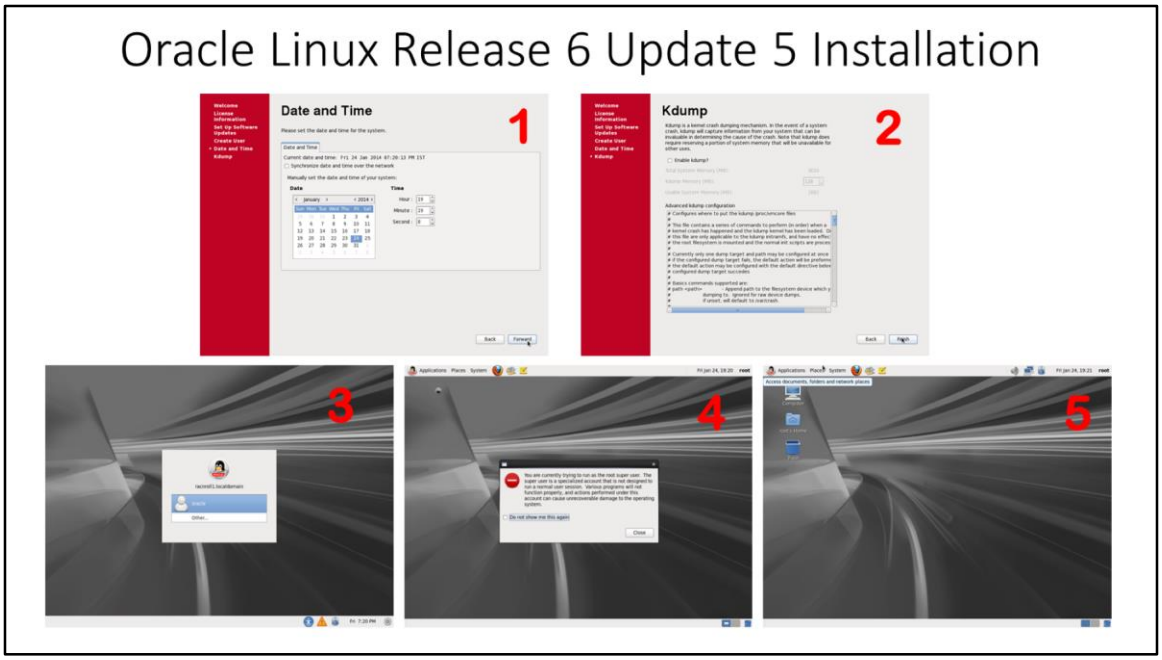
devel-3.8.13-16.2.1.el6uek.x86_64”.
6. Click on “Reboot” to reboot the VM.

Oracle Linux Release 6 Update 5 Installation



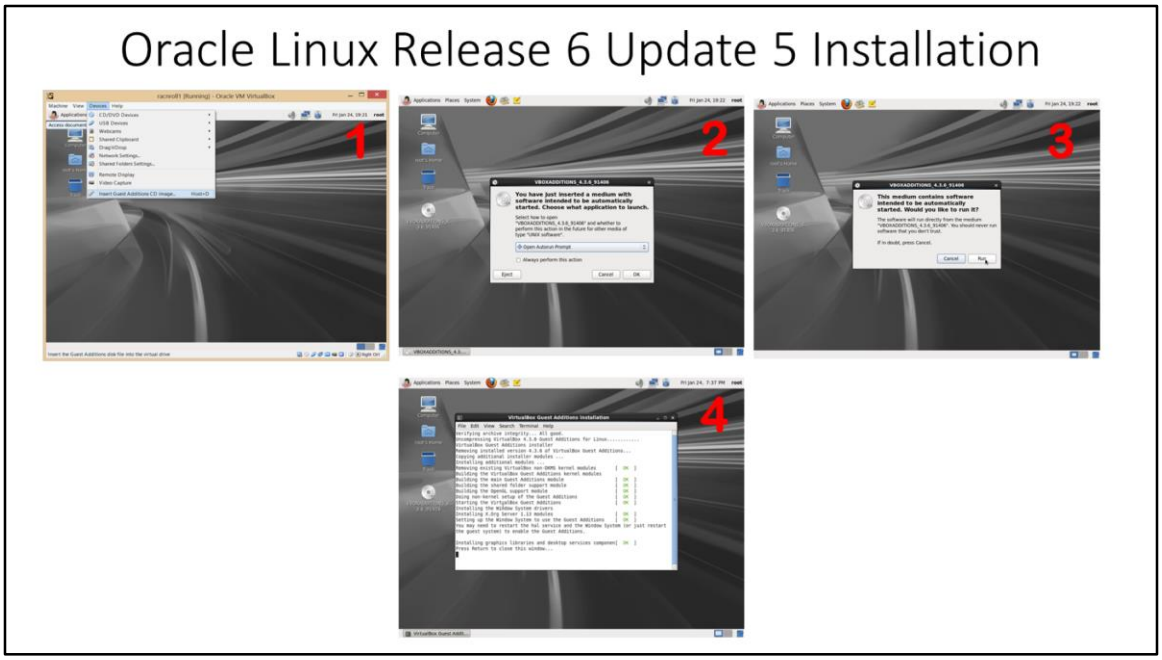
Oracle Linux Release 6 Update 5 Installation

1. Click on “Forward”
2. Select “ Yes, I agree to the License Agreement” and click on “Forward”
3. Select “No, I prefer to register at a later time” and click on “Forward”
4. Select “No thanks, I”ll connect later.” and click on “Forward”
5. click on “Forward”
6. We don’t require to create any user so click on “Forward”



Oracle Linux Release 6 Update 5 Installation

1. Click “Forward”, the Linux VM will pickup Date and Time from Host operating system, so you don’t required to change any date and time.
2. Click “Finish” to complete the OEL installation.
3. Login as “root” user by selecting other option
4. Click on “Do not show me this again” message and close
5. Now you can see OEL desktop.



Oracle Linux Release 6 Update 5 Installation

Installing Guest Additions:

1. Click “Devices” > “ Insert Guest Additions CD image” or HOST+D (Right CTRL + D)
2. Click “OK” to proceed further
3. Click “Run”
4. Press “Enter” to close the window
5. Reboot the VM – Go to “System” → “Shutdown” → “Restart” or Issue “reboot” command from terminal

For your Knowledge:

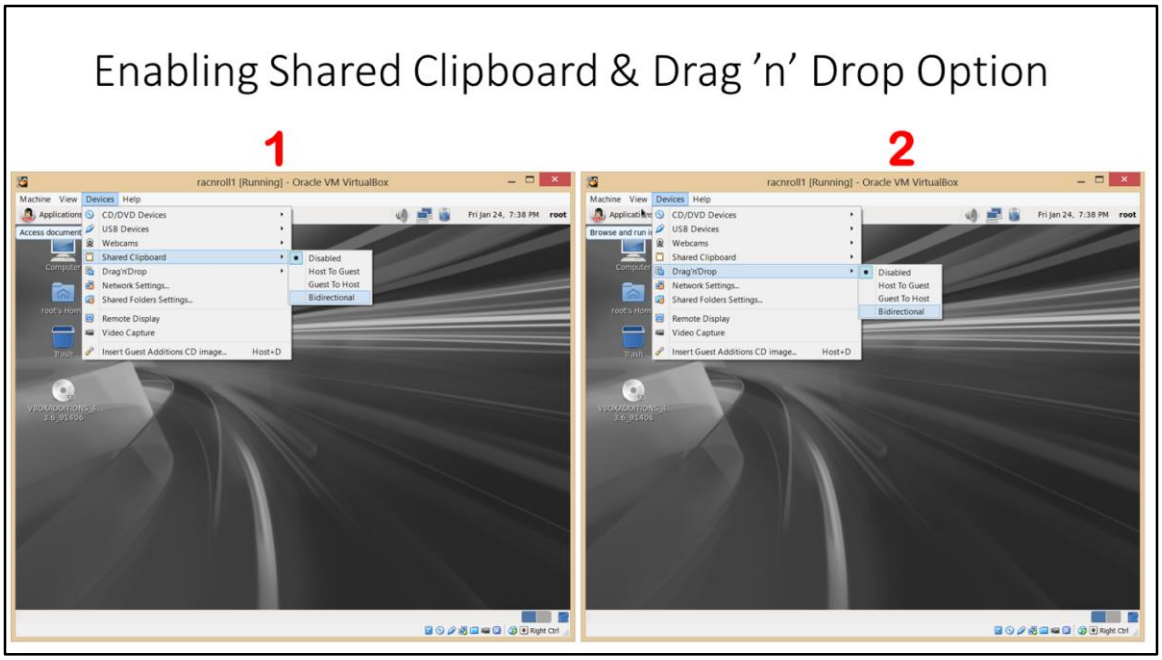
the Guest Additions are designed to be installed *inside* a virtual machine after the guest operating system has been installed. They consist of device drivers and system applications that optimize the guest operating system for better performance and usability.

The VirtualBox Guest Additions for all supported guest operating systems are provided as a single CD-ROM image file which is called VBoxGuestAdditions.iso. This image file is located in the installation directory of VirtualBox. To install the Guest

Additions for a particular VM, you mount this ISO file in your VM as a virtual CD-ROM and install from there.

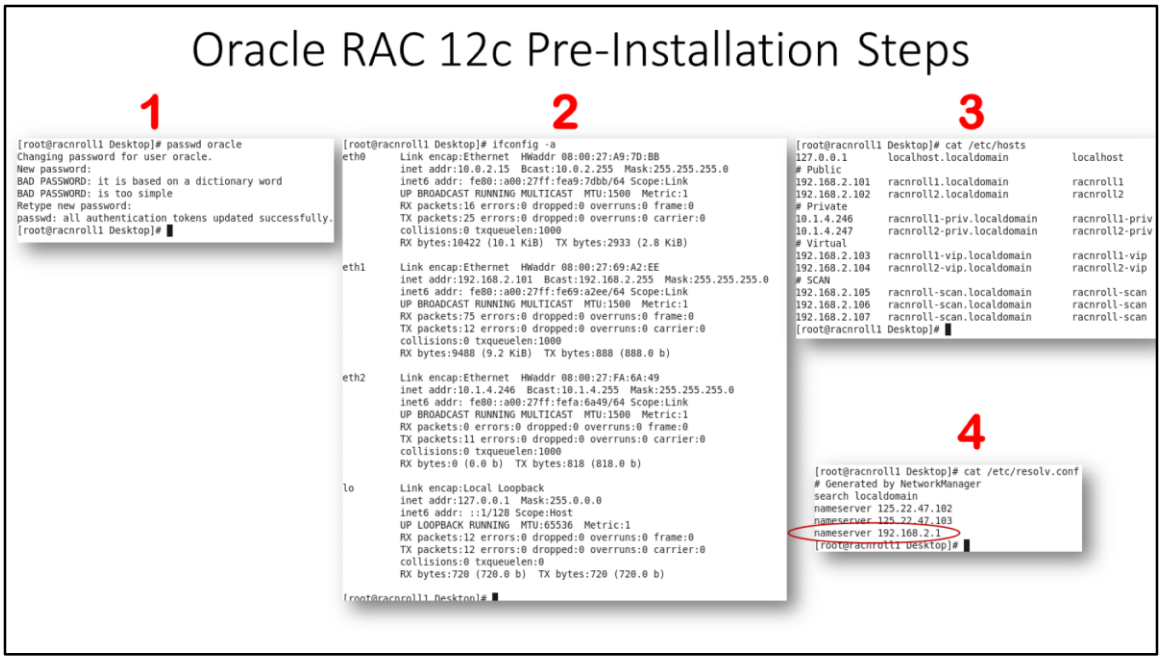
The Guest Additions offer the following features:

- Mouse pointer integration
- Shared folders
- Better video support
- Seamless windows
- Generic host/guest communication channels
- Time synchronization
- Shared clipboard
- Automated logons (credentials passing)



Oracle Linux Release 6 Update 5 Installation

Enabling Shared Clipboard & Drag 'n' Drop Option from Device menu.
After this, you can able to copy clipboard from host operating system to VMs.



Oracle RAC 12c Pre-Installation Steps

1. Change “oracle” user password, here in HOL “oracle” password is “oracle” – Use “passwd oracle” command to change.
2. Check IP addresses are properly populated using ifconfig –a command
3. Update /etc/hosts file as per above screen shot.
4. Cross verify the "/etc/resolv.conf" file includes a nameserver entry that points to the correct nameserver.

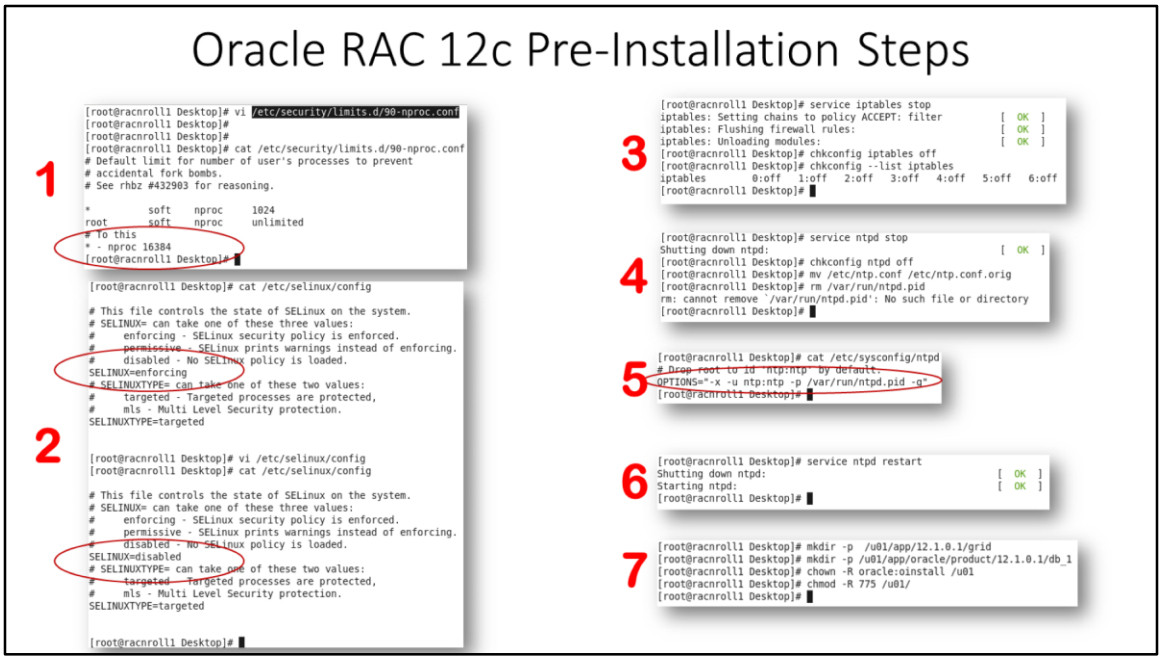
```
vi /etc/hosts
#Public
192.168.2.101        racnroll1.localdomain
          racnroll1
192.168.2.102        racnroll2.localdomain
          racnroll2

#Private
10.1.4.246           racnroll1-priv.localdomain
```

```
          racnroll1-priv
10.1.4.247          racnroll2-priv.localdomain
          racnroll2-priv

#Virtual
192.168.2.111       racnroll1-vip.localdomain
          racnroll1-vip
192.168.2.112       racnroll2-vip.localdomain
          racnroll2-vip

#SCAN
192.168.2.201       racnroll-scan.localdomain
          racnroll-scan
192.168.2.202       racnroll-scan.localdomain
          racnroll-scan
192.168.2.203       racnroll-scan.localdomain
          racnroll-scan
```

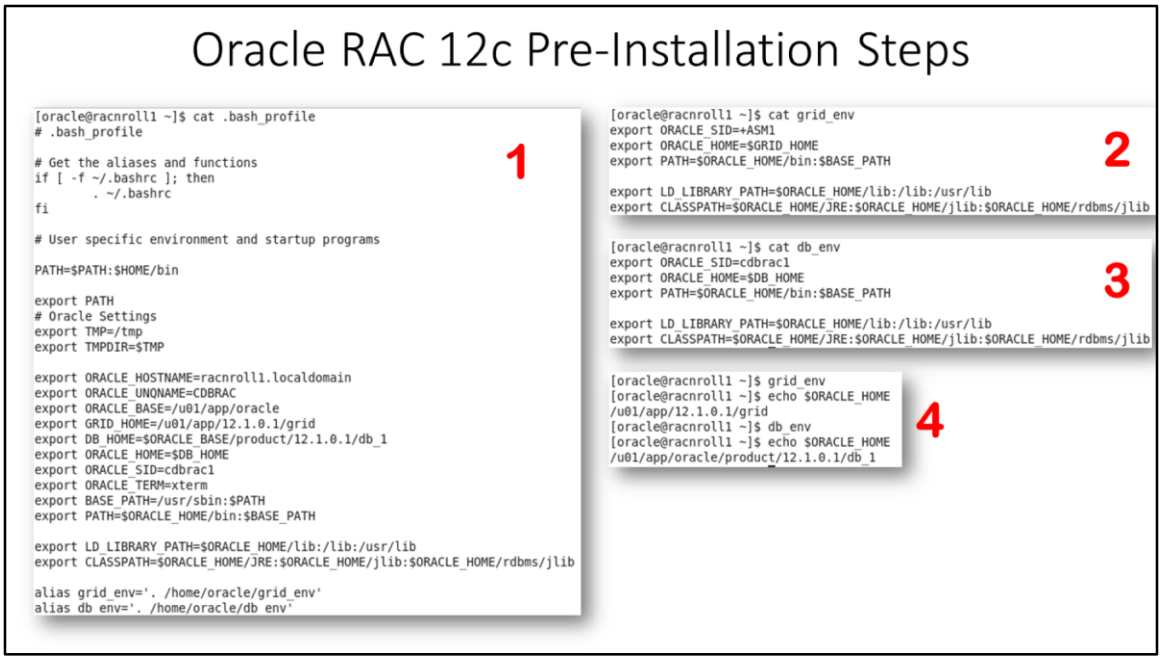

Oracle RAC 12c Pre-Installation Steps
1
[root@racnroll1 Desktop]# vi /etc/security/limits.d/90-nproc.conf
[root@racnroll1 Desktop]#
[root@racnroll1 Desktop]#
[root@racnroll1 Desktop]# cat /etc/security/limits.d/90-nproc.conf
Default limit for number of user's processes to prevent
accidental fork bombs.
See rhbz #432903 for reasoning.
*   soft   nproc   1024
root   soft   nproc   unlimited
To this
* - nproc 16384
[root@racnroll1 Desktop]#
2
[root@racnroll1 Desktop]# cat /etc/selinux/config
# This file controls the state of SELinux on the system.
# SELINUX= can take one of these three values:
#   enforcing - SELinux security policy is enforced.
#   permissive - SELinux prints warnings instead of enforcing.
#   disabled - No SELinux policy is loaded.
SELINUX=enforcing
# SELINUXTYPE= can take one of these two values:
#   targeted - Targeted processes are protected,
#   mls - Multi Level Security protection.
SELINUXTYPE=targeted
[root@racnroll1 Desktop]# vi /etc/selinux/config
[root@racnroll1 Desktop]# cat /etc/selinux/config
# This file controls the state of SELinux on the system.
# SELINUX= can take one of these three values:
#   enforcing - SELinux security policy is enforced.
#   permissive - SELinux prints warnings instead of enforcing.
#   disabled - No SELinux policy is loaded.
SELINUX=disabled
# SELINUXTYPE= can take one of these two values:
#   targeted - Targeted processes are protected,
#   mls - Multi Level Security protection.
SELINUXTYPE=targeted
[root@racnroll1 Desktop]#
3
[root@racnroll1 Desktop]# service iptables stop
iptables: Setting chains to policy ACCEPT: filter   [OK]
iptables: Flushing firewall rules: [OK]
iptables: Unloading modules: [OK]
[root@racnroll1 Desktop]# chkconfig iptables off
[root@racnroll1 Desktop]# chkconfig --list iptables
iptables   0:off   1:off   2:off   3:off   4:off   5:off   6:off
[root@racnroll1 Desktop]#
4
[root@racnroll1 Desktop]# service ntpd stop
Shutting down ntpd: [OK]
[root@racnroll1 Desktop]# chkconfig ntpd off
[root@racnroll1 Desktop]# mv /etc/ntp.conf /etc/ntp.conf.orig
[root@racnroll1 Desktop]# rm /var/run/ntpd.pid
rm: cannot remove `/var/run/ntpd.pid': No such file or directory
[root@racnroll1 Desktop]#
5
[root@racnroll1 Desktop]# cat /etc/sysconfig/ntpd
# Drop root to id 'ntp:ntp' by default.
OPTIONS="-x -u ntp:ntp -p /var/run/ntpd.pid -g"
[root@racnroll1 Desktop]#
6
[root@racnroll1 Desktop]# service ntpd restart
Shutting down ntpd: [OK]
Starting ntpd: [OK]
[root@racnroll1 Desktop]#
7
[root@racnroll1 Desktop]# mkdir -p /u01/app/12.1.0.1/grid
[root@racnroll1 Desktop]# mkdir -p /u01/app/oracle/product/12.1.0.1/db_1
[root@racnroll1 Desktop]# chown -R oracle:oinstall /u01
[root@racnroll1 Desktop]# chmod -R 775 /u01/
[root@racnroll1 Desktop]#

Oracle RAC 12c Pre-Installation Steps

1. Update "*/etc/security/limits.d/90-nproc.conf*" and change
   * soft nproc 1024
   to
   * - nproc 16384

For more details - Cannot Increase "nproc" Value More Than 1024 in Oracle Linux 6 (Doc ID 1487773.1)

2. Edit the file “/etc/selinux/config” and the Change the SELINUX value to "**SELINUX=disabled**".
3. Disable the Firewall using “service iptables stop”
4. Stop NTPD service using “service ntpd stop”
5. Add "-x“ to "/etc/sysconfig/ntpd“
6. Restart NTP.
7. Create Oracle software directories.



1. Login as “oracle” user and edit .bash_profile file using vi editor

```
# .bash_profile

# Get the aliases and functions
if [ -f ~/.bashrc ]; then
          . ~/.bashrc
fi

# User specific environment and startup programs

PATH=$PATH:$HOME/bin

export PATH
# Oracle Settings
export TMP=/tmp
export TMPDIR=$TMP

export ORACLE_HOSTNAME=racnroll1.localdomain
```

```
export ORACLE_UNQNAME=CDBRAC
export ORACLE_BASE=/u01/app/oracle
export GRID_HOME=/u01/app/12.1.0.1/grid
export DB_HOME=$ORACLE_BASE/product/12.1.0.1/db_1
export ORACLE_HOME=$DB_HOME
export ORACLE_SID=cdbrac1
export ORACLE_TERM=xterm
export BASE_PATH=/usr/sbin:$PATH
export PATH=$ORACLE_HOME/bin:$BASE_PATH

export LD_LIBRARY_PATH=$ORACLE_HOME/lib:/lib:/usr/lib
export
CLASSPATH=$ORACLE_HOME/JRE:$ORACLE_HOME/jlib:$ORACLE_HOME
/rdbms/jlib

alias grid_env='. /home/oracle/grid_env'
alias db_env='. /home/oracle/db_env‘
```

2. Create grid_env file using vi editor

```
export ORACLE_SID=+ASM2
export ORACLE_HOME=$GRID_HOME
export PATH=$ORACLE_HOME/bin:$BASE_PATH

export LD_LIBRARY_PATH=$ORACLE_HOME/lib:/lib:/usr/lib
export
CLASSPATH=$ORACLE_HOME/JRE:$ORACLE_HOME/jlib:$ORACLE_HOME
/rdbms/jlib
```

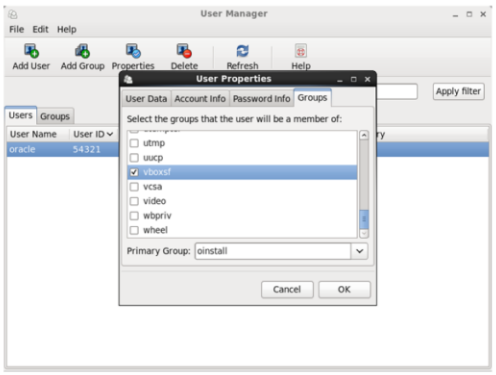
3. Creat db_env file using vi editor

```
export ORACLE_SID=cdbrac2
export ORACLE_HOME=$DB_HOME
export PATH=$ORACLE_HOME/bin:$BASE_PATH

export LD_LIBRARY_PATH=$ORACLE_HOME/lib:/lib:/usr/lib
export
CLASSPATH=$ORACLE_HOME/JRE:$ORACLE_HOME/jlib:$ORACLE_HOME
/rdbms/jlib
```

4. Cross verify with executing grid_env and db_env as shown above.

Oracle RAC 12c Pre-Installation Steps

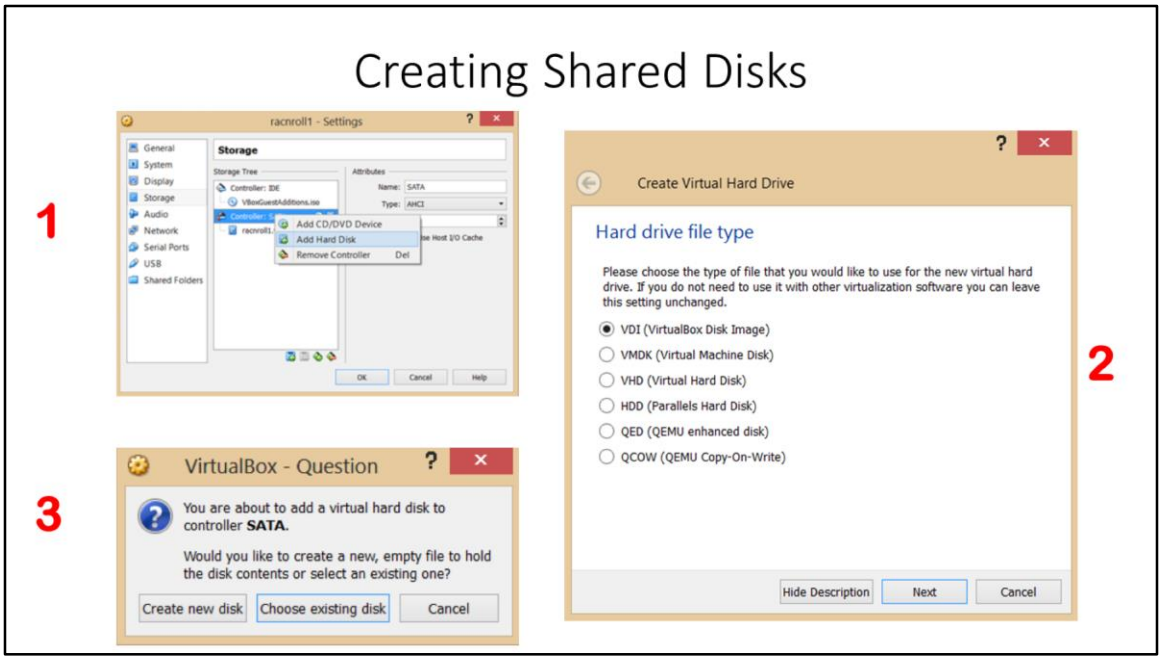


Oracle RAC 12c Pre-Installation Steps

This step is required to access Oracle Software bits from host operating system.
Go to System→ Administration → Users and groups, double click on “oracle” user and go to Groups tab as shown and select “vboxsf”

Shutdown the VM using command “shutdown -h now”

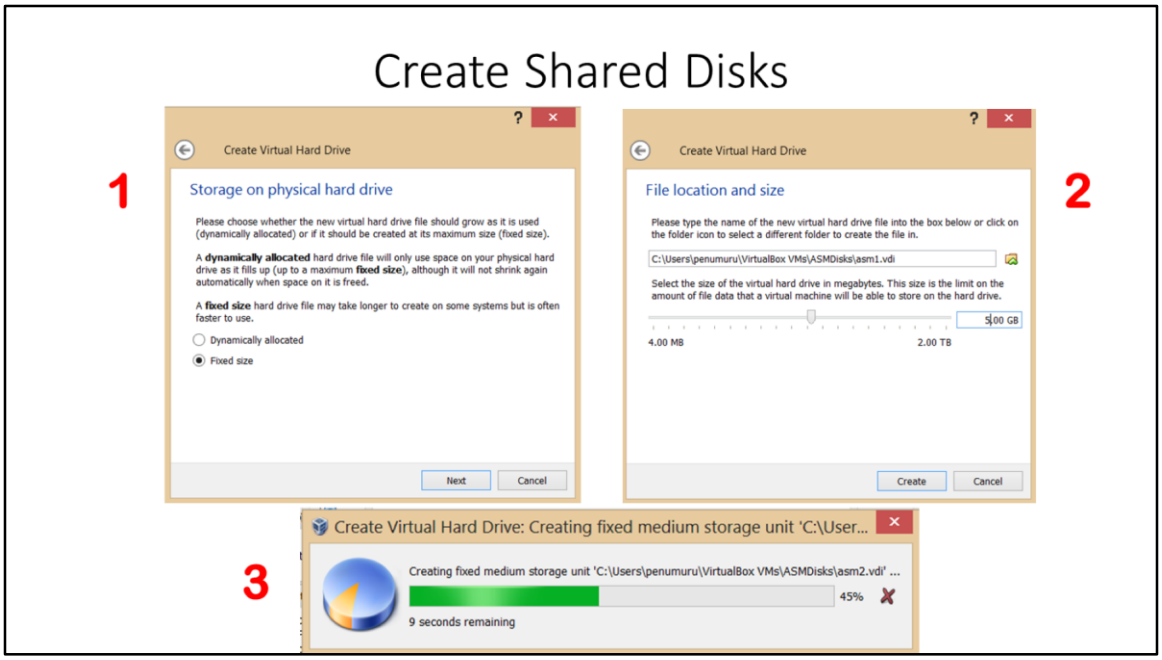
Oracle RAC 12c Pre-Installation Steps


Creating Shared Disks
1
racnroll1 - Settings
Storage
Add CD/DVD Device
Add Hard Disk
Remove Controller
2
Create Virtual Hard Drive
Hard drive file type
Please choose the type of file that you would like to use for the new virtual hard drive. If you do not need to use it with other virtualization software you can leave this setting unchanged.
VDI (VirtualBox Disk Image)
VMDK (Virtual Machine Disk)
VHD (Virtual Hard Disk)
HDD (Parallels Hard Disk)
QED (QEMU enhanced disk)
QCOW (QEMU Copy-On-Write)
Hide Description
Next
Cancel
3
VirtualBox - Question
You are about to add a virtual hard disk to controller SATA.
Would you like to create a new, empty file to hold the disk contents or select an existing one?
Create new disk
Choose existing disk
Cancel

Create Shared Disks

Go to “racnroll1” VM Settings

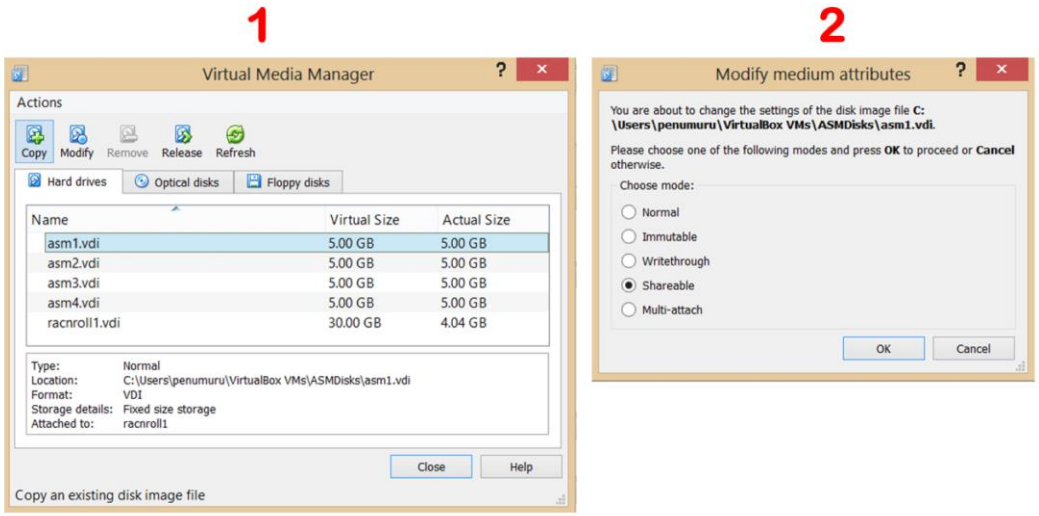
1. Click on “Storage”, right Click on “Controller : SATA” and choose “Add Hard Disk”
2. Select Hard drive file type as “ VDI (VirtualBox Disk Image)” and click “Next”
3. Select “Create new disk”


Create Shared Disks
1
Create Virtual Hard Drive
Storage on physical hard drive
Please choose whether the new virtual hard drive file should grow as it is used (dynamically allocated) or if it should be created at its maximum size (fixed size).
A dynamically allocated hard drive file will only use space on your physical hard drive as it fills up (up to a maximum fixed size), although it will not shrink again automatically when space on it is freed.
A fixed size hard drive file may take longer to create on some systems but is often faster to use.
Dynamically allocated
Fixed size
Next
Cancel
2
Create Virtual Hard Drive
File location and size
Please type the name of the new virtual hard drive file into the box below or click on the folder icon to select a different folder to create the file in.
C:\Users\penumuru\VirtualBox VMs\ASMDisks\asm1.vdi
Select the size of the virtual hard drive in megabytes. This size is the limit on the amount of file data that a virtual machine will be able to store on the hard drive.
5.00 GB
4.00 MB
2.00 TB
Create
Cancel
3
Create Virtual Hard Drive: Creating fixed medium storage unit 'C:\User...
Creating fixed medium storage unit 'C:\Users\penumuru\VirtualBox VMs\ASMDisks\asm2.vdi' ...
45%
9 seconds remaining

Create Shared Disks

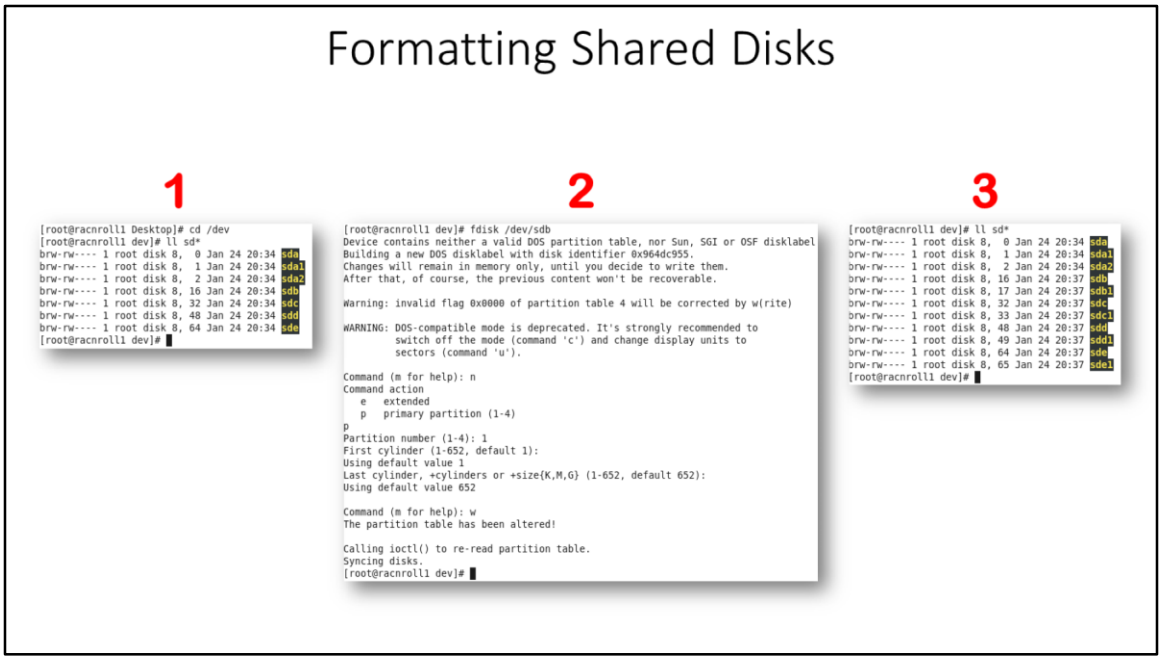
1. Choose “Fixed size”
2. Best practice to Choose File location outside of existing VM directory and input “5GB” as storage space
3. Click “Create”

Sharing Shared Disks



Sharing Shared Disks

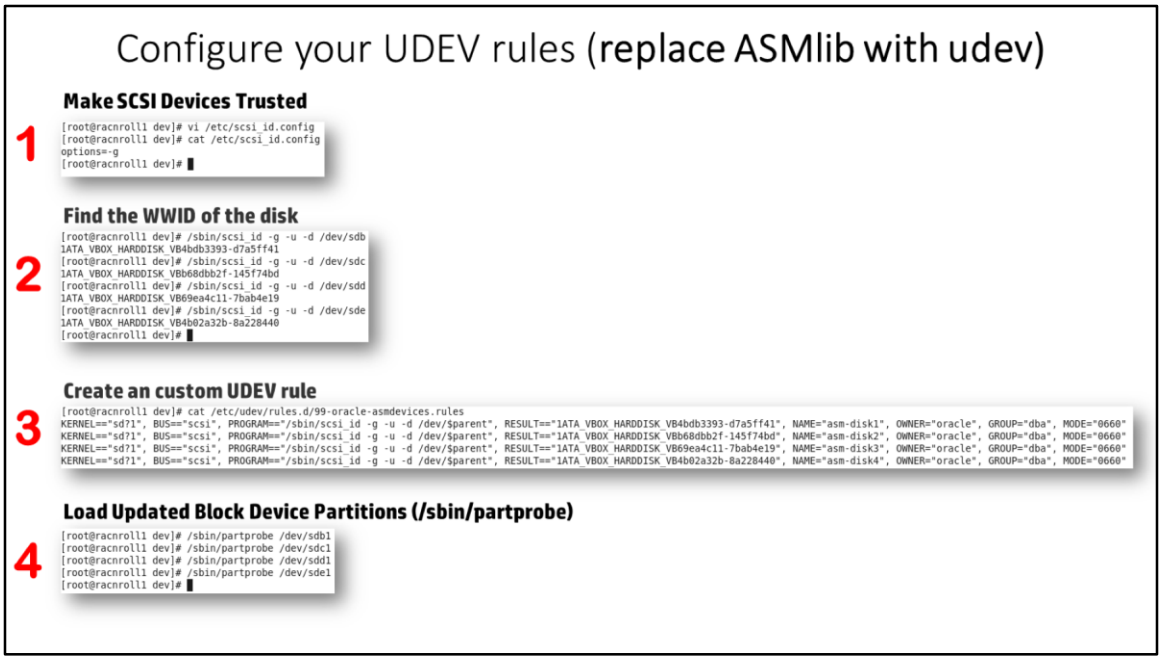
1. Go to “File” > “Virtual Media Manager”
2. Right click on Shared disk and make it Shareable. Repeat the task for all four shared disks.


Formatting Shared Disks
1
[root@racnroll1 Desktop]# cd /dev
[root@racnroll1 dev]# ll sd*
brw-rw---- 1 root disk 8, 0 Jan 24 20:34 sda
brw-rw---- 1 root disk 8, 1 Jan 24 20:34 sda1
brw-rw---- 1 root disk 8, 2 Jan 24 20:34 sda2
brw-rw---- 1 root disk 8, 16 Jan 24 20:34 sdb
brw-rw---- 1 root disk 8, 32 Jan 24 20:34 sdc
brw-rw---- 1 root disk 8, 48 Jan 24 20:34 sdd
brw-rw---- 1 root disk 8, 64 Jan 24 20:34 sde
[root@racnroll1 dev]#
2
[root@racnroll1 dev]# fdisk /dev/sdb
Device contains neither a valid DOS partition table, nor Sun, SGI or OSF disklabel
Building a new DOS disklabel with disk identifier 0x964dc955.
Changes will remain in memory only, until you decide to write them.
After that, of course, the previous content won't be recoverable.
Warning: invalid flag 0x0000 of partition table 4 will be corrected by w(rite)
WARNING: DOS-compatible mode is deprecated. It's strongly recommended to
switch off the mode (command 'c') and change display units to
sectors (command 'u').
Command (m for help): n
Command action
e extended
p primary partition (1-4)
p
Partition number (1-4): 1
First cylinder (1-652, default 1):
Using default value 1
Last cylinder, +cylinders or +size{K,M,G} (1-652, default 652):
Using default value 652
Command (m for help): w
The partition table has been altered!
Calling ioctl() to re-read partition table.
Syncing disks.
[root@racnroll1 dev]#
3
[root@racnroll1 dev]# ll sd*
brw-rw---- 1 root disk 8, 0 Jan 24 20:34 sda
brw-rw---- 1 root disk 8, 1 Jan 24 20:34 sda1
brw-rw---- 1 root disk 8, 2 Jan 24 20:34 sda2
brw-rw---- 1 root disk 8, 16 Jan 24 20:37 sdb
brw-rw---- 1 root disk 8, 17 Jan 24 20:37 sdb1
brw-rw---- 1 root disk 8, 32 Jan 24 20:37 sdc
brw-rw---- 1 root disk 8, 33 Jan 24 20:37 sdc1
brw-rw---- 1 root disk 8, 48 Jan 24 20:37 sdd
brw-rw---- 1 root disk 8, 49 Jan 24 20:37 sdd1
brw-rw---- 1 root disk 8, 64 Jan 24 20:37 sde
brw-rw---- 1 root disk 8, 65 Jan 24 20:37 sde1
[root@racnroll1 dev]#

Formatting Shared Disks

Start the “racnroll1” VM and login a root user. Now we have to configure the Shared disks.

1. Go to /dev file system and look for sd* using ls command. Since we have added four shared disks, you can see sdb, sdc, sdd and sde.
2. Format shared disks using “fdisk” command as shown above. (n,p,1,enter,enter,p,w)
3. Once format is completed, you can see sdb1, sdc1, sdd1 and sde1.


Configure your UDEV rules (replace ASMlib with udev)
Make SCSI Devices Trusted
1
[root@racnroll1 dev]# vi /etc/scsi_id.config
[root@racnroll1 dev]# cat /etc/scsi_id.config
options=-g
[root@racnroll1 dev]#
Find the WWID of the disk
2
[root@racnroll1 dev]# /sbin/scsi_id -g -u -d /dev/sdb
1ATA_VBOX_HARDDISK_VB4bdb3393-d7a5ff41
[root@racnroll1 dev]# /sbin/scsi_id -g -u -d /dev/sdc
1ATA_VBOX_HARDDISK_VBb68dbb2f-145f74bd
[root@racnroll1 dev]# /sbin/scsi_id -g -u -d /dev/sdd
1ATA_VBOX_HARDDISK_VB69ea4c11-7bab4e19
[root@racnroll1 dev]# /sbin/scsi_id -g -u -d /dev/sde
1ATA_VBOX_HARDDISK_VB4b02a32b-8a228440
[root@racnroll1 dev]#
Create an custom UDEV rule
3
[root@racnroll1 dev]# cat /etc/udev/rules.d/99-oracle-asmdevices.rules
KERNEL=="sd?1", BUS=="scsi", PROGRAM=="/sbin/scsi_id -g -u -d /dev/$parent", RESULT=="1ATA_VBOX_HARDDISK_VB4bdb3393-d7a5ff41", NAME="asm-disk1", OWNER="oracle", GROUP="dba", MODE="0660"
KERNEL=="sd?1", BUS=="scsi", PROGRAM=="/sbin/scsi_id -g -u -d /dev/$parent", RESULT=="1ATA_VBOX_HARDDISK_VBb68dbb2f-145f74bd", NAME="asm-disk2", OWNER="oracle", GROUP="dba", MODE="0660"
KERNEL=="sd?1", BUS=="scsi", PROGRAM=="/sbin/scsi_id -g -u -d /dev/$parent", RESULT=="1ATA_VBOX_HARDDISK_VB69ea4c11-7bab4e19", NAME="asm-disk3", OWNER="oracle", GROUP="dba", MODE="0660"
KERNEL=="sd?1", BUS=="scsi", PROGRAM=="/sbin/scsi_id -g -u -d /dev/$parent", RESULT=="1ATA_VBOX_HARDDISK_VB4b02a32b-8a228440", NAME="asm-disk4", OWNER="oracle", GROUP="dba", MODE="0660"
Load Updated Block Device Partitions (/sbin/partprobe)
4
[root@racnroll1 dev]# /sbin/partprobe /dev/sdb1
[root@racnroll1 dev]# /sbin/partprobe /dev/sdc1
[root@racnroll1 dev]# /sbin/partprobe /dev/sdd1
[root@racnroll1 dev]# /sbin/partprobe /dev/sde1
[root@racnroll1 dev]#

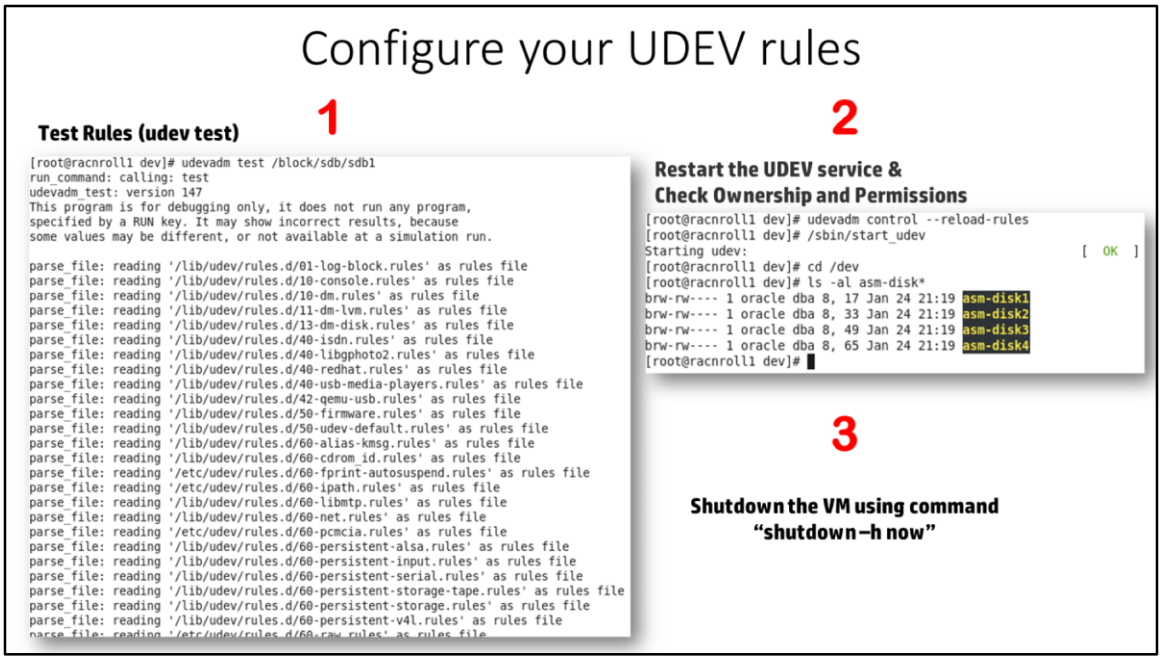
Configure your UDEV rules

1. Add “options=-g” to "/etc/scsi_id.config" file.
2. Find SCSI ID of all four disk using “scsi_id” command as shown above.
3. Using scsi_id, edit "/etc/udev/rules.d/99-oracle-asmdevices.rules" file as shown above.
4. Load updated block device partition tables.

vi /etc/udev/rules.d/99-oracle-asmdevices.rule

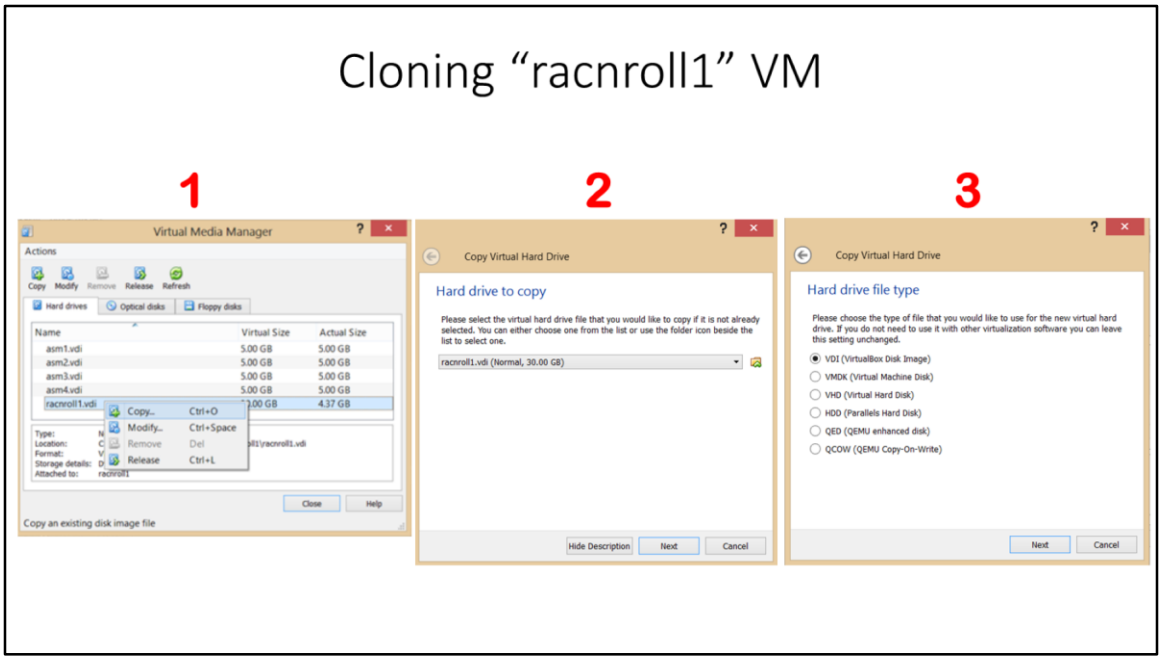
```
KERNEL=="sd?1", BUS=="scsi", PROGRAM=="/sbin/scsi_id -g -u -d /dev/$parent", RESULT=="WWID", NAME="asm-
disk1", OWNER="oracle", GROUP="dba", MODE="0660"
KERNEL=="sd?1", BUS=="scsi", PROGRAM=="/sbin/scsi_id -g -u -d /dev/$parent", RESULT=="WWID", NAME="asm-
disk2", OWNER="oracle", GROUP="dba", MODE="0660"
KERNEL=="sd?1", BUS=="scsi", PROGRAM=="/sbin/scsi_id -g -u -d /dev/$parent", RESULT=="WWID", NAME="asm-
disk3", OWNER="oracle", GROUP="dba", MODE="0660"
KERNEL=="sd?1", BUS=="scsi", PROGRAM=="/sbin/scsi_id -g -u -d /dev/$parent", RESULT=="WWID", NAME="asm-
disk4", OWNER="oracle", GROUP="dba", MODE="0660"
```

For Knowledge: How to replace ASMlib with udev (Doc ID 1461321.1)


Configure your UDEV rules
1
Test Rules (udev test)
[root@racnroll1 dev]# udevadm test /block/sdb/sdb1
run_command: calling: test
udevadm_test: version 147
This program is for debugging only, it does not run any program,
specified by a RUN key. It may show incorrect results, because
some values may be different, or not available at a simulation run.
parse_file: reading '/lib/udev/rules.d/01-log-block.rules' as rules file
parse_file: reading '/lib/udev/rules.d/10-console.rules' as rules file
parse_file: reading '/lib/udev/rules.d/10-dm.rules' as rules file
parse_file: reading '/lib/udev/rules.d/11-dm-lvm.rules' as rules file
parse_file: reading '/lib/udev/rules.d/13-dm-disk.rules' as rules file
parse_file: reading '/lib/udev/rules.d/40-isdn.rules' as rules file
parse_file: reading '/lib/udev/rules.d/40-libgphoto2.rules' as rules file
parse_file: reading '/lib/udev/rules.d/40-redhat.rules' as rules file
parse_file: reading '/lib/udev/rules.d/40-usb-media-players.rules' as rules file
parse_file: reading '/lib/udev/rules.d/42-qemu-usb.rules' as rules file
parse_file: reading '/lib/udev/rules.d/50-firmware.rules' as rules file
parse_file: reading '/lib/udev/rules.d/50-udev-default.rules' as rules file
parse_file: reading '/lib/udev/rules.d/60-alias-kmsg.rules' as rules file
parse_file: reading '/lib/udev/rules.d/60-cdrom_id.rules' as rules file
parse_file: reading '/etc/udev/rules.d/60-fprint-autosuspend.rules' as rules file
parse_file: reading '/etc/udev/rules.d/60-ipath.rules' as rules file
parse_file: reading '/lib/udev/rules.d/60-libmtp.rules' as rules file
parse_file: reading '/lib/udev/rules.d/60-net.rules' as rules file
parse_file: reading '/etc/udev/rules.d/60-pcmcia.rules' as rules file
parse_file: reading '/lib/udev/rules.d/60-persistent-alsa.rules' as rules file
parse_file: reading '/lib/udev/rules.d/60-persistent-input.rules' as rules file
parse_file: reading '/lib/udev/rules.d/60-persistent-serial.rules' as rules file
parse_file: reading '/lib/udev/rules.d/60-persistent-storage-tape.rules' as rules file
parse_file: reading '/lib/udev/rules.d/60-persistent-storage.rules' as rules file
parse_file: reading '/lib/udev/rules.d/60-persistent-v4l.rules' as rules file
2
Restart the UDEV service &
Check Ownership and Permissions
[root@racnroll1 dev]# udevadm control --reload-rules
[root@racnroll1 dev]# /sbin/start_udev
Starting udev: [OK]
[root@racnroll1 dev]# cd /dev
[root@racnroll1 dev]# ls -al asm-disk*
brw-rw---- 1 oracle dba 8, 17 Jan 24 21:19 asm-disk1
brw-rw---- 1 oracle dba 8, 33 Jan 24 21:19 asm-disk2
brw-rw---- 1 oracle dba 8, 49 Jan 24 21:19 asm-disk3
brw-rw---- 1 oracle dba 8, 65 Jan 24 21:19 asm-disk4
[root@racnroll1 dev]#
3
Shutdown the VM using command
"shutdown –h now"

Configure your UDEV rules

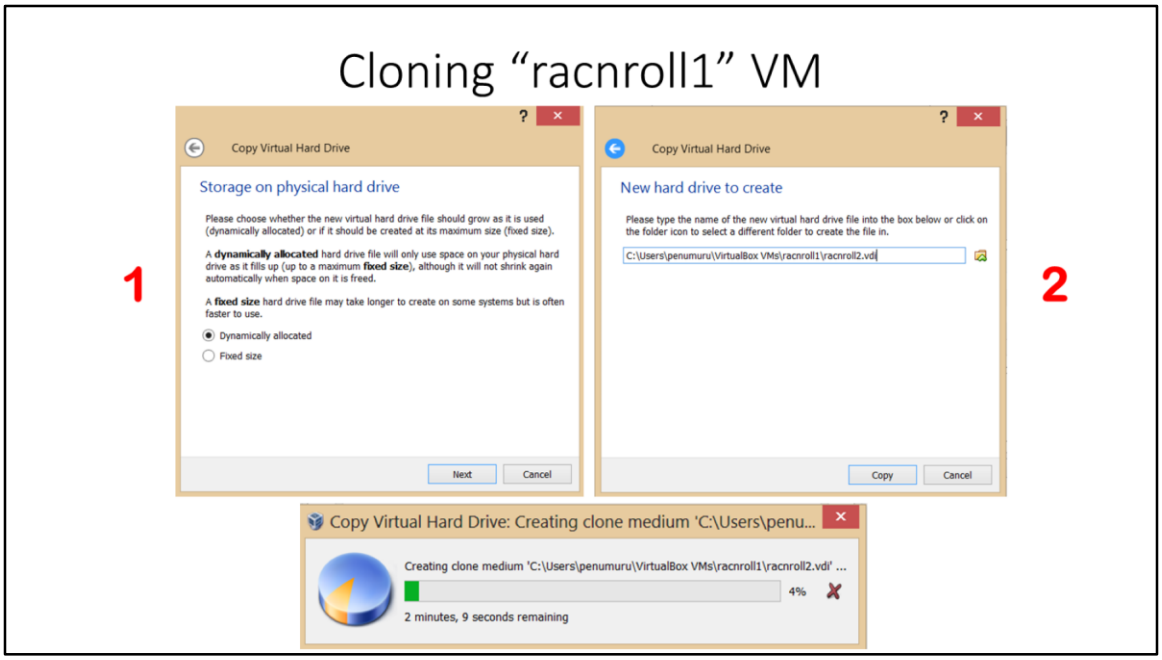
1. Test the rules using "/sbin/udevadm test" as shown above. Test all disks using same command.
2. Reload the UDEV rules using "/sbin/udevadm control --reload-rules" and start UDEV "/sbin/start_udev". Verify the disk ownership using ls command.
3. Shutdown the VM using command "shutdown –h now"



Cloning “racnroll1” VM

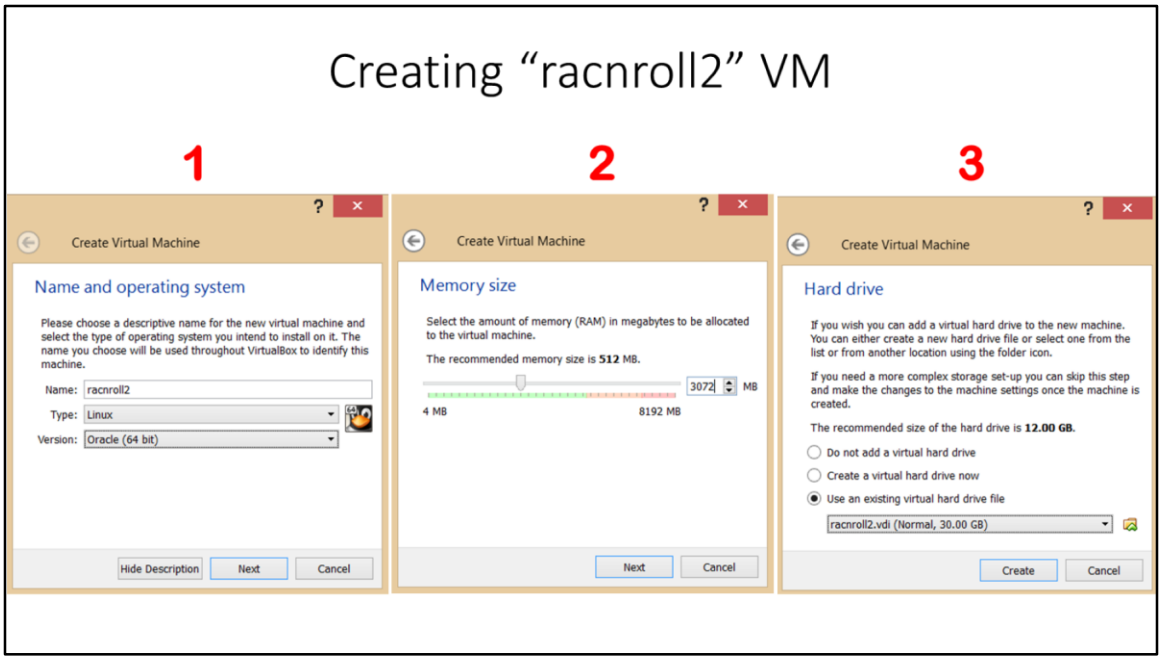
There are many ways to clone “racnroll1” VM, but easiest and quickest way is to copy from Virtual Media Manager

1. Go to “File” > “Virtual Media Manager”. Select “racnroll1” and right click and select “Copy” option.
2. Click “Next”
3. Choose “VDI” as hard drive file type


Cloning “racnroll1” VM
1
Copy Virtual Hard Drive
Storage on physical hard drive
Please choose whether the new virtual hard drive file should grow as it is used (dynamically allocated) or if it should be created at its maximum size (fixed size).
A dynamically allocated hard drive file will only use space on your physical hard drive as it fills up (up to a maximum fixed size), although it will not shrink again automatically when space on it is freed.
A fixed size hard drive file may take longer to create on some systems but is often faster to use.
Dynamically allocated
Fixed size
Next
Cancel
Copy Virtual Hard Drive
New hard drive to create
Please type the name of the new virtual hard drive file into the box below or click on the folder icon to select a different folder to create the file in.
C:\Users\penumuru\VirtualBox VMs\racnroll1\racnroll2.vdi
Copy
Cancel
2
Copy Virtual Hard Drive: Creating clone medium 'C:\Users\penu...
Creating clone medium 'C:\Users\penumuru\VirtualBox VMs\racnroll1\racnroll2.vdi' ...
4%
2 minutes, 9 seconds remaining

Cloning “racnroll1” VM

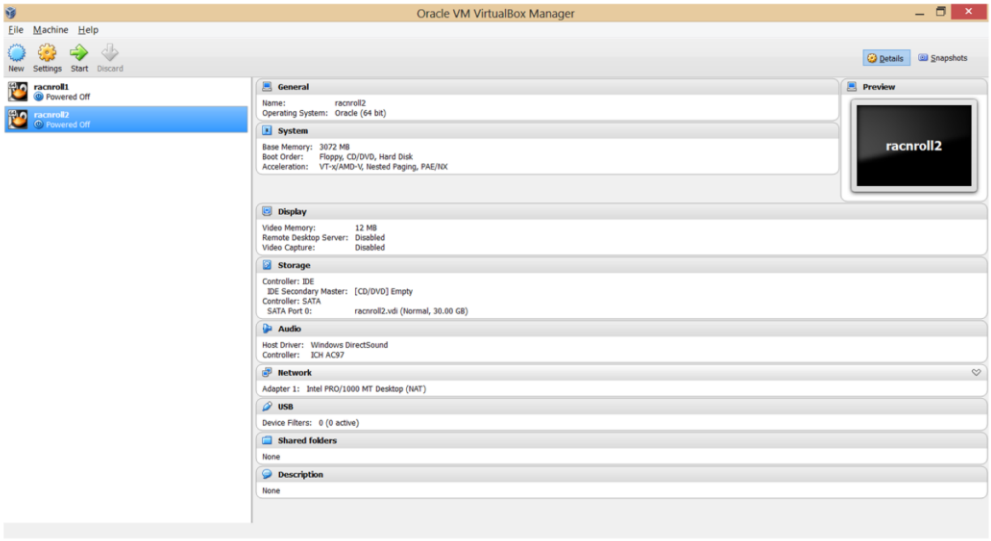
1. Choose “Dynamically allocated” option and click “Next”
2. Provide the path and click “copy” and wait for operation to complete.


Creating “racnroll2” VM
1
2
3
Create Virtual Machine
Name and operating system
Please choose a descriptive name for the new virtual machine and select the type of operating system you intend to install on it. The name you choose will be used throughout VirtualBox to identify this machine.
Name: racnroll2
Type: Linux
Version: Oracle (64 bit)
Hide Description
Next
Cancel
Create Virtual Machine
Memory size
Select the amount of memory (RAM) in megabytes to be allocated to the virtual machine.
The recommended memory size is 512 MB.
3072 MB
4 MB
8192 MB
Next
Cancel
Create Virtual Machine
Hard drive
If you wish you can add a virtual hard drive to the new machine. You can either create a new hard drive file or select one from the list or from another location using the folder icon.
If you need a more complex storage set-up you can skip this step and make the changes to the machine settings once the machine is created.
The recommended size of the hard drive is 12.00 GB.
Do not add a virtual hard drive
Create a virtual hard drive now
Use an existing virtual hard drive file
racnroll2.vdi (Normal, 30.00 GB)
Create
Cancel

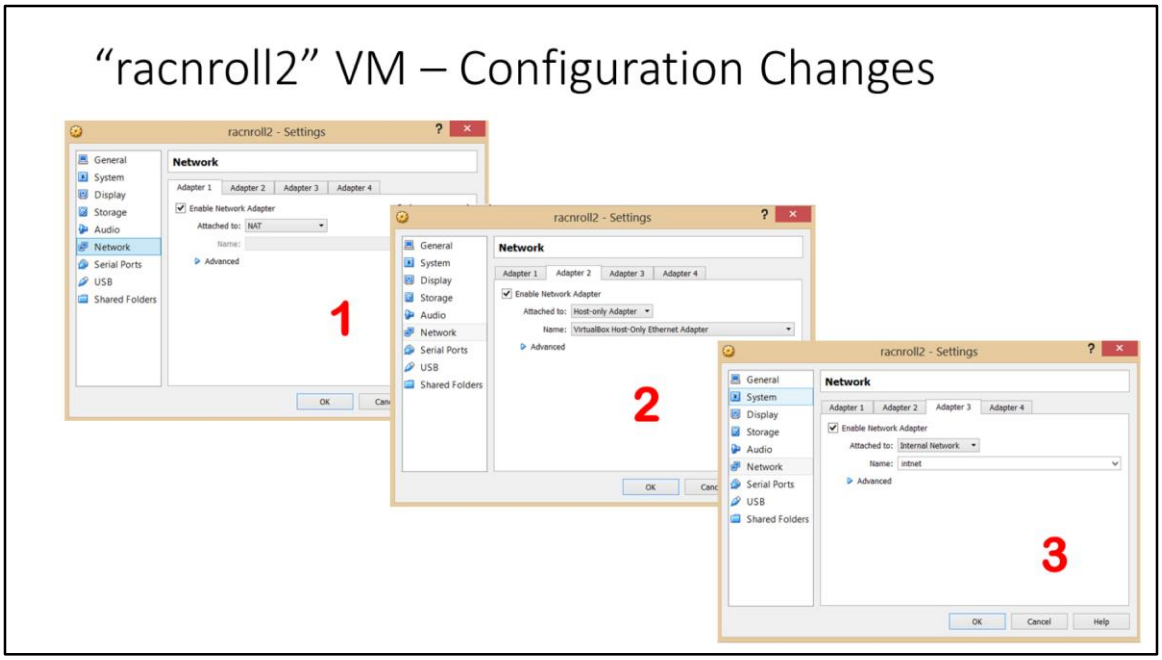
Creating “racnroll2” VM

1. Go to “Machine” > New and provide the name of the new VM as “racnroll2”, type “Linux” & Version “Oracle (64bit)”
2. Input Memory size as 3072
3. Select “Use an existing virtual hard drive file”

“racnroll2” VM is ready



The VM “racnroll2” is ready.

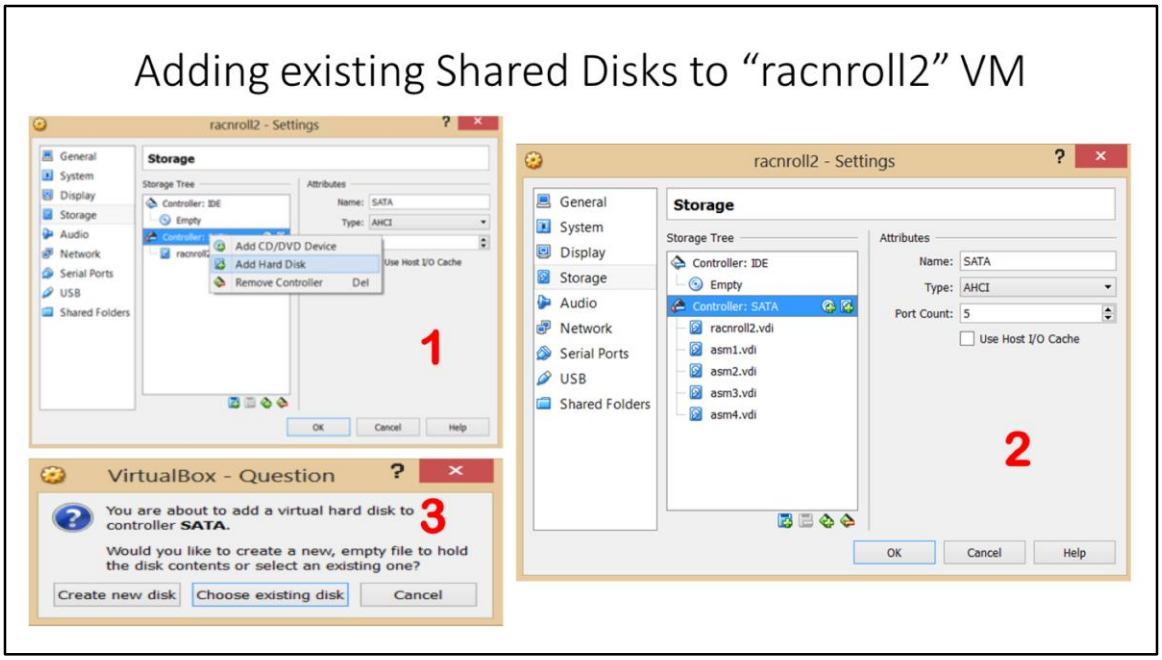


“racnroll2” VM – Configuration Changes

Go to “racnroll2” VM Settings, Click on Network

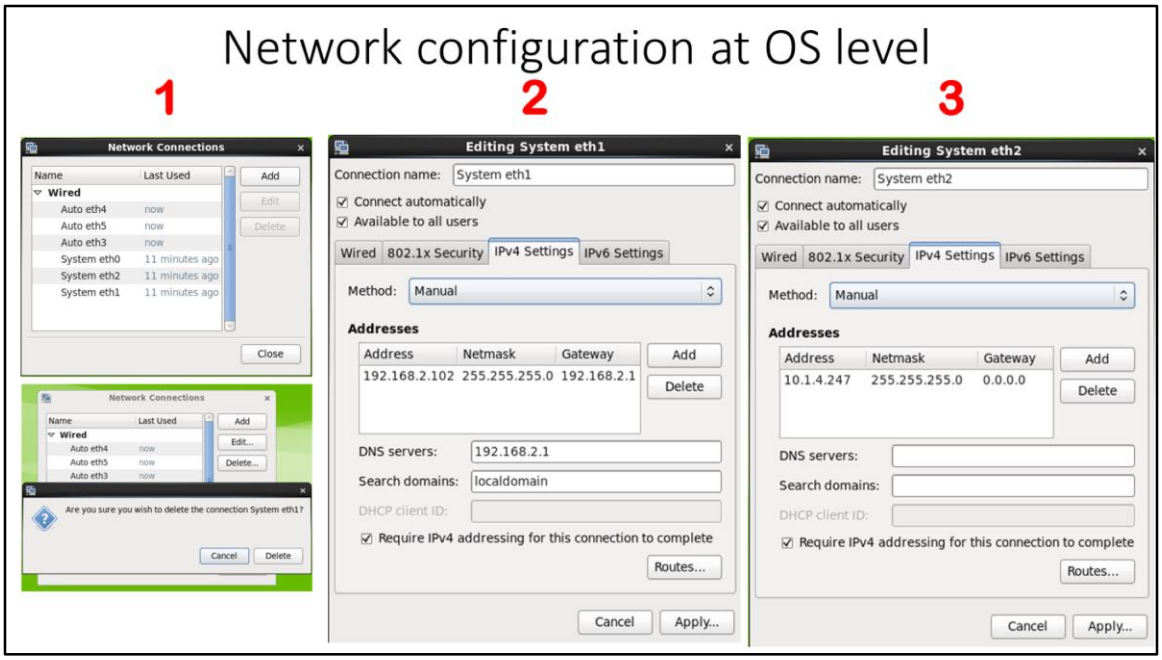
1. Select “Adapter 1” and Click on “Enable Network Adapter” and Select “NAT” as Attached to
2. Select “Adapter 2” and Click on “Enable Network Adapter” and Select “Host-Only Adapter” as Attached to
3. Select “Adapter 1” and Click on “Enable Network Adapter” and Select “Internal Network” as Attached to

Click on “OK”



Adding existing Shared Disks to “racnroll2” VM

1. Go to “racnroll2” VM Settings. Click on “Storage”
2. Right click “Controller: SATA” and select “Add hard Disk”
3. Choose existing disk and point to existing shared disks created previously.



Network configuration at OS level

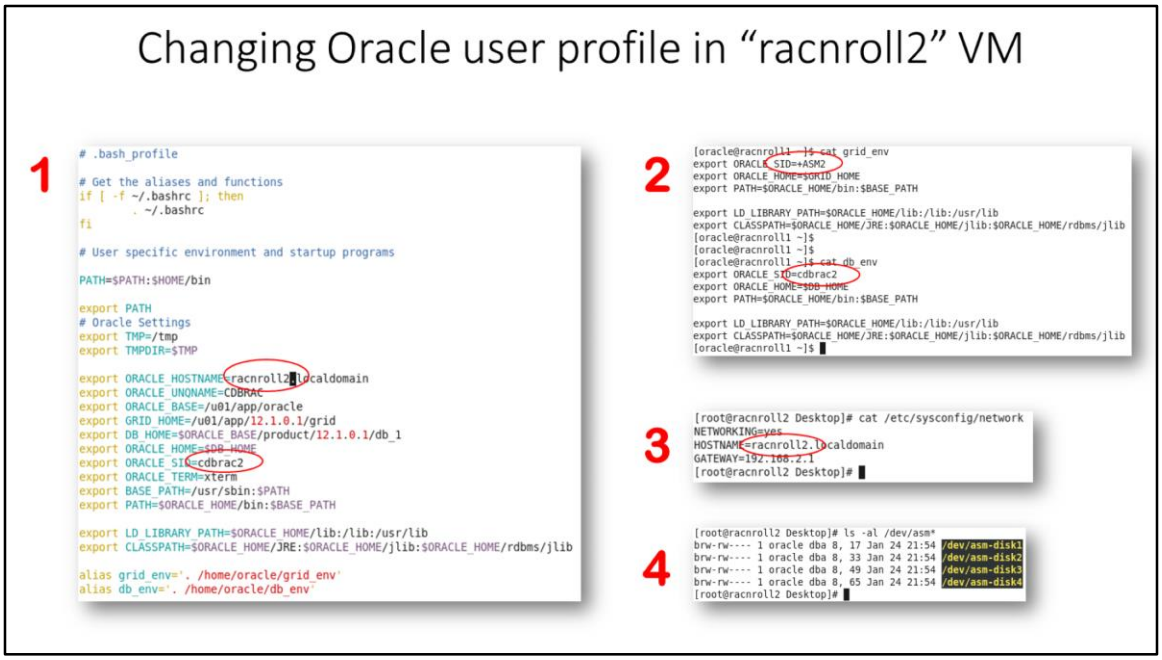
Start “racnroll2” VM using “start” button.

1. Go to Network settings (VM Desktop → System→ Preferences→ Network Connections) and remove “System eth0, System eth1 and System eth2”, these three belongs to “racnroll1” VM.

2. Edit IP address of Public network
    1. Select “Connect automatically”
    2. Go to “IPV4 Settings” and select method as “Manual” and input the Address - 192.168.2.102, Netmask - 255.255.255.0 , Gateway - 192.168.2.1, DNS Servers – 192.168.2.1, Search domain – localdomain and finally click on “Apply”

3. Edit IP address of Private network
    1. Select “Connect automatically”
    2. Go to “IPV4 Settings” and select method as “Manual” and input the Address – 10.1.4.247, Netmask - 255.255.255.0 , Gateway – blank , DNS

Servers – blank , Search domain – blank and finally click on “Apply”



Changing Oracle user profile in “racnroll2” VM

1. Switch user to oracle using “ su – oracle” and “.bash_profile” file and change the appropriate values highlited in the picture.
2. Similarly change the appropriate values in “grid_env” and “db_env” files.
3. Change the hostname by editing “/etc/sysconfig/network” file
4. Make sure you are able to view shared disks from second node i.e. “racnroll2”

```
vi .bash_profile

# .bash_profile

# Get the aliases and functions
if [ -f ~/.bashrc ]; then
          . ~/.bashrc
fi

# User specific environment and startup programs
```

```
PATH=$PATH:$HOME/bin

export PATH
# Oracle Settings
export TMP=/tmp
export TMPDIR=$TMP

export ORACLE_HOSTNAME=racnroll2.localdomain
export ORACLE_UNQNAME=CDBRAC
export ORACLE_BASE=/u01/app/oracle
export GRID_HOME=/u01/app/12.1.0.1/grid
export DB_HOME=$ORACLE_BASE/product/12.1.0.1/db_1
export ORACLE_HOME=$DB_HOME
export ORACLE_SID=cdbrac2
export ORACLE_TERM=xterm
export BASE_PATH=/usr/sbin:$PATH
export PATH=$ORACLE_HOME/bin:$BASE_PATH

export LD_LIBRARY_PATH=$ORACLE_HOME/lib:/lib:/usr/lib
export
CLASSPATH=$ORACLE_HOME/JRE:$ORACLE_HOME/jlib:$ORACLE_HOME
/rdbms/jlib

alias grid_env='. /home/oracle/grid_env'
alias db_env='. /home/oracle/db_env'


vi grid_env
export ORACLE_SID=+ASM2
export ORACLE_HOME=$GRID_HOME
export PATH=$ORACLE_HOME/bin:$BASE_PATH

export LD_LIBRARY_PATH=$ORACLE_HOME/lib:/lib:/usr/lib
export
CLASSPATH=$ORACLE_HOME/JRE:$ORACLE_HOME/jlib:$ORACLE_HOME
/rdbms/jlib


vi db_env
export ORACLE_SID=cdbrac2
export ORACLE_HOME=$DB_HOME
```

```
export PATH=$ORACLE_HOME/bin:$BASE_PATH

export LD_LIBRARY_PATH=$ORACLE_HOME/lib:/lib:/usr/lib
export
CLASSPATH=$ORACLE_HOME/JRE:$ORACLE_HOME/jlib:$ORACLE_HOME
/rdbms/jlib
```

Install the following package from the Oracle grid media as the root user.

1

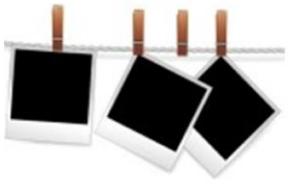
```
[root@racnroll1 Desktop]# df -lh
Filesystem                      Size  Used Avail Use% Mounted on
/dev/mapper/vg_racnroll1-lv_root   27G  3.7G   22G  15% /
tmpfs                          1.5G  224K  1.5G   1% /dev/shm
/dev/sda1                      477M   55M  397M  13% /boot
Oracle12c                      238G  197G   41G  83% /media/sf_Oracle12c
/dev/sr0                        62M   62M     0 100% /media/VBOXADDITIONS_4.3.6_91406
[root@racnroll1 Desktop]# cd /media/sf_Oracle12c/grid/rpm/
[root@racnroll1 rpm]# ll
total 9
-rwxrwx--- 1 root vboxsf 8827 Mar 27  2013 cvuqdisk-1.0.9-1.rpm
[root@racnroll1 rpm]# rpm -ivh cvuqdisk-1.0.9-1.rpm
Preparing...                ########################################### [100%]
Using default group oinstall to install package
   1:cvuqdisk               ########################################### [100%]
[root@racnroll1 rpm]#
```

2

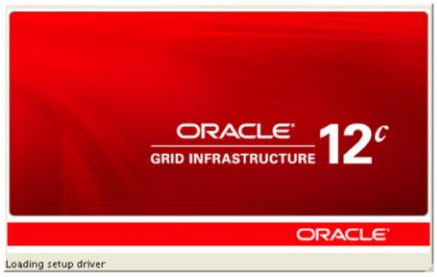
```
[root@racnroll2 Desktop]# df -kh
Filesystem                      Size  Used Avail Use% Mounted on
/dev/mapper/vg_racnroll1-lv_root   27G  3.7G   22G  15% /
tmpfs                          1.5G  224K  1.5G   1% /dev/shm
/dev/sda1                      477M   55M  397M  13% /boot
Oracle12c                      238G  197G   41G  83% /media/sf_Oracle12c
[root@racnroll2 Desktop]# cd /media/sf_Oracle12c/grid/rpm/
[root@racnroll2 rpm]# ll
total 9
-rwxrwx--- 1 root vboxsf 8827 Mar 27  2013 cvuqdisk-1.0.9-1.rpm
[root@racnroll2 rpm]# rpm -ivh cvuqdisk-1.0.9-1.rpm
Preparing...                ########################################### [100%]
Using default group oinstall to install package
   1:cvuqdisk               ########################################### [100%]
[root@racnroll2 rpm]#
```

Install “cvuqdisk” package from grid installation directory in both nodes “racnroll1” and “racnroll2”.

For Knowledge:
“cvuqdisk” package is a Cluster Verification Utility (CVU), distributed with Oracle clusterware.



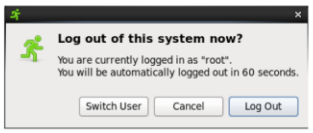
Good practice to take the snapshot of the both VMs at this point



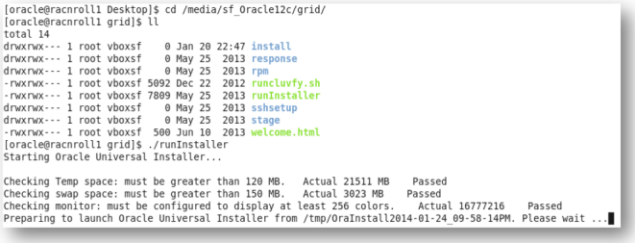
Oracle Grid Infrastructure Installation

Oracle Grid Infrastructure Installation

1


Log out of this system now?
You are currently logged in as "root".
You will be automatically logged out in 60 seconds.
Switch User
Cancel
Log Out

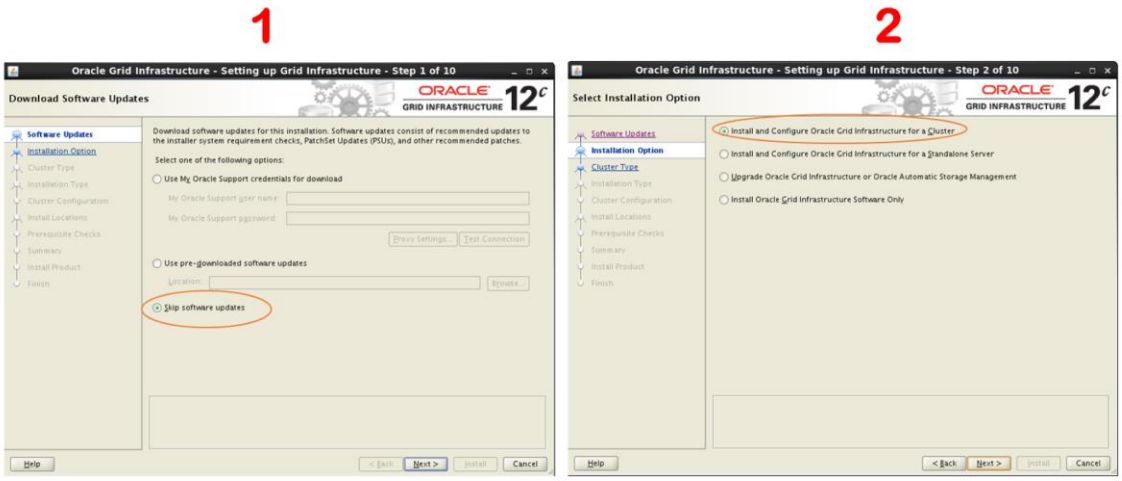
2


[oracle@racnroll1 Desktop]$ cd /media/sf_Oracle12c/grid/
[oracle@racnroll1 grid]$ ll
total 14
drwxrwx--- 1 root vboxsf 0 Jan 20 22:47 install
drwxrwx--- 1 root vboxsf 0 May 25 2013 response
drwxrwx--- 1 root vboxsf 0 May 25 2013 rpm
-rwxrwx--- 1 root vboxsf 5092 Dec 22 2012 runcluvfy.sh
-rwxrwx--- 1 root vboxsf 7809 May 25 2013 runInstaller
drwxrwx--- 1 root vboxsf 0 May 25 2013 sshsetup
drwxrwx--- 1 root vboxsf 0 May 25 2013 stage
-rwxrwx--- 1 root vboxsf 500 Jun 10 2013 welcome.html
[oracle@racnroll1 grid]$ ./runInstaller
Starting Oracle Universal Installer...
Checking Temp space: must be greater than 120 MB. Actual 21511 MB Passed
Checking swap space: must be greater than 150 MB. Actual 3023 MB Passed
Checking monitor: must be configured to display at least 256 colors. Actual 16777216 Passed
Preparing to launch Oracle Universal Installer from /tmp/OraInstall2014-01-24_09-58-14PM. Please wait ...

Oracle Grid Infrastructure Installation

1. Switch User to “oracle”
2. Go to Installation media and run ./runInstaller

Oracle Grid Infrastructure Installation

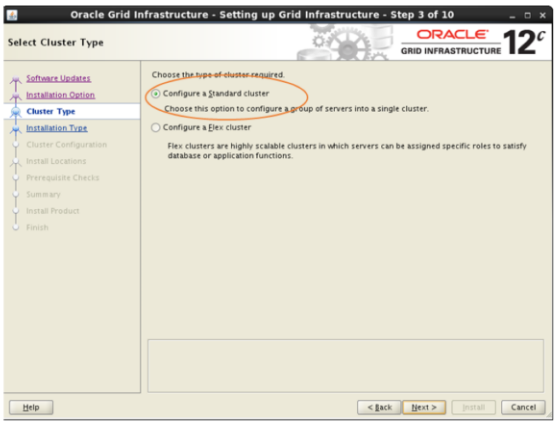


Oracle Grid Infrastructure Installation

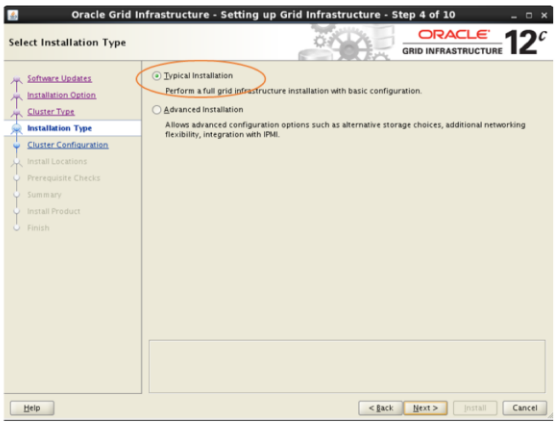
1. Download Software Updates window -
   Select “Skip software updates” and click “Next” to continue.
2. Select Installation Option window -
   Select radio button “Install and Configure Oracle Grid Infrastructure for a cluster” and click “Next” to continue.

Oracle Grid Infrastructure Installation

3


Oracle Grid Infrastructure - Setting up Grid Infrastructure - Step 3 of 10
Select Cluster Type
ORACLE GRID INFRASTRUCTURE 12c
Software Updates
Installation Option
Cluster Type
Installation Type
Cluster Configuration
Install Locations
Prerequisite Checks
Summary
Install Product
Finish
Choose the type of cluster required.
Configure a Standard cluster
Choose this option to configure a group of servers into a single cluster.
Configure a Flex cluster
Flex clusters are highly scalable clusters in which servers can be assigned specific roles to satisfy database or application functions.
Help
< Back
Next >
Install
Cancel

4



Oracle Grid Infrastructure Installation

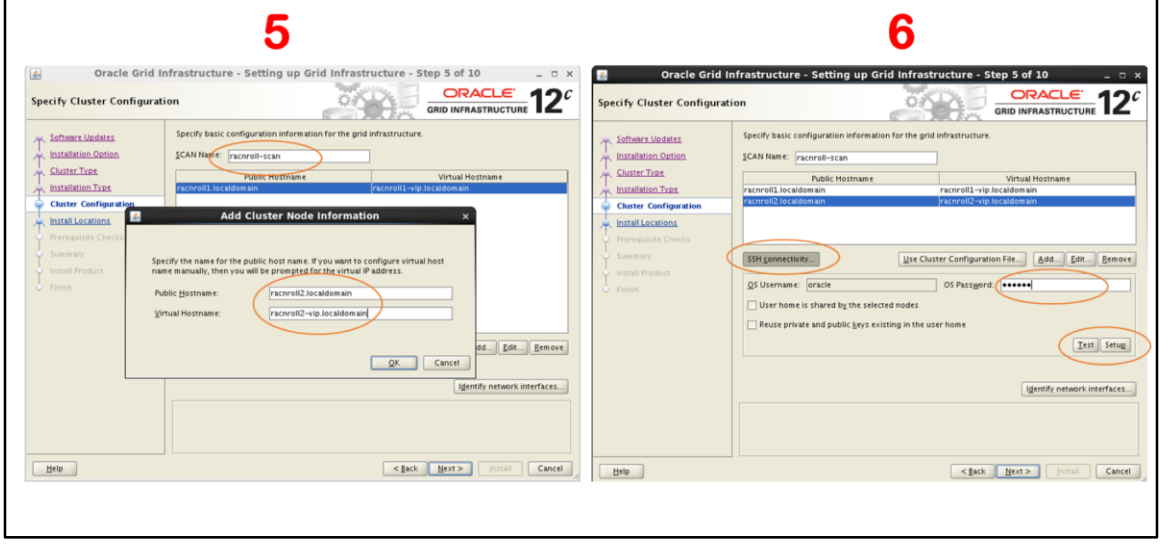
3. Select Cluster Type Window –

Select default option radio button “Configure a Standard cluster” and click “Next” to continue.

4. Select Installation Type Window –

Select default option radio button “Typical Installation” and click “Next” to continue.

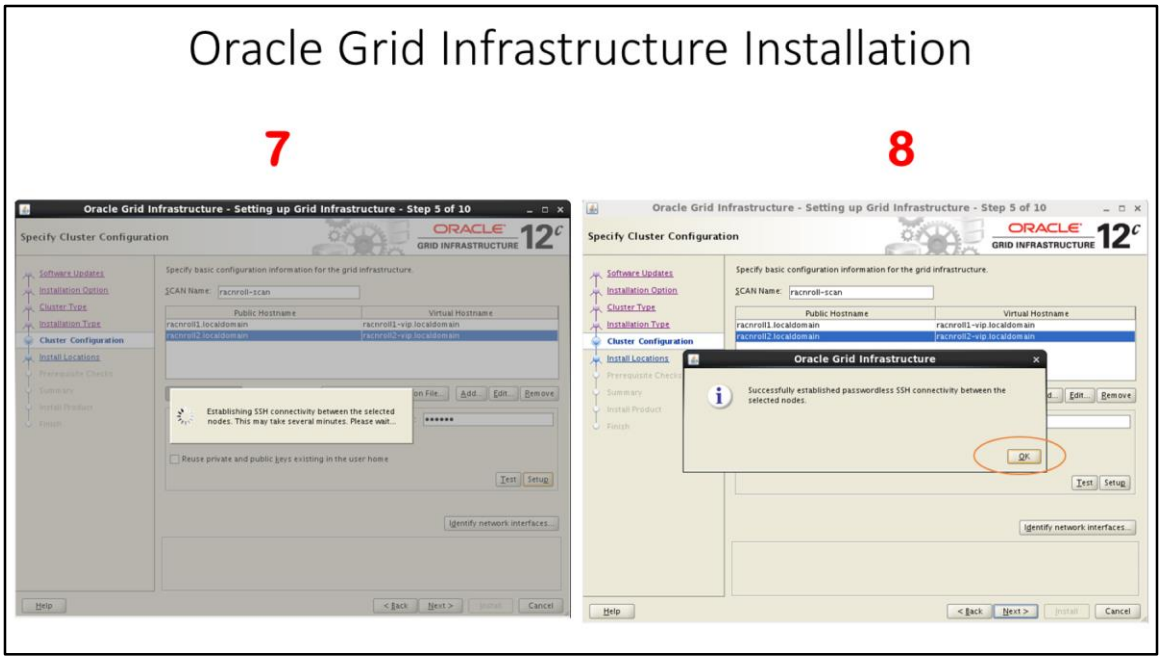
Oracle Grid Infrastructure Installation



Oracle Grid Infrastructure Installation – Specify Cluster Configuration window

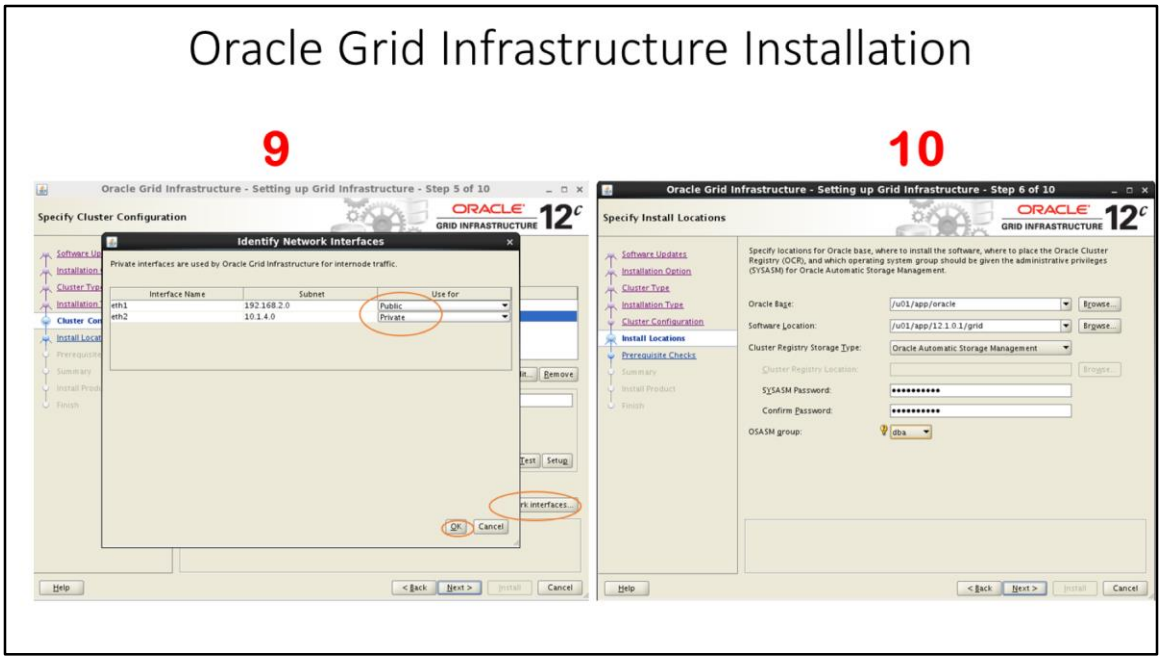
5. Enter “SCAN Name” as “racnroll-scan”.
Click on “Add” buttons to specify the node names and virtual IP addresses you configured previously in your /etc/hosts file..
Public Hostname – “racnroll2.localdomain” &
Virtual Hostname – “racnroll2-vip.localdomain”

6. Use the 'SSH Connectivity' button to configure/test the passwordless SSH connectivity between your nodes.
Click on “SSH Connectivity”, provide the Oracle password (oracle password is oracle in this lab) and click on Setup.



Oracle Grid Infrastructure Installation – Specify Cluster Configuration window

7. “SSH Connectivity” setup will take some time.
8. Popup windows displays, password less SSH connectivity between the selected nodes successfully established. Press OK to close the window.



Oracle Grid Infrastructure Installation

9. Specify Cluster Configuration Window -

   Click on “Identify network interfaces” to cross verify the “Interface name” , “Subnet” and “Use for”, Click “OK” to close the window and Click “Next” to proceed.

10. Specify Install location window

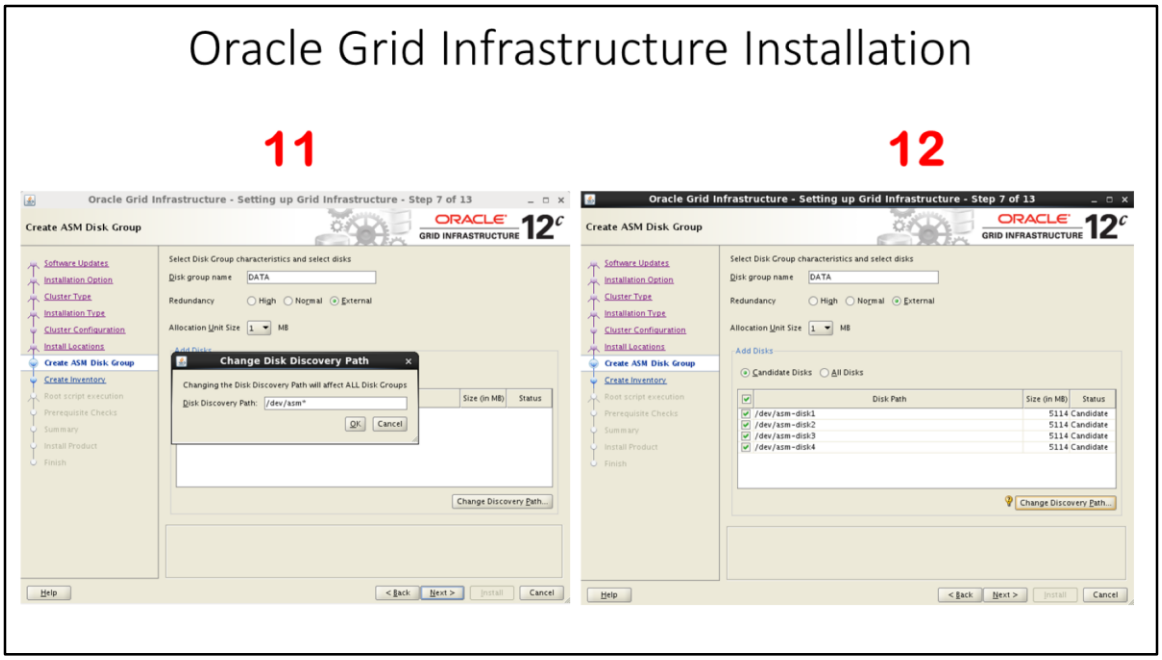
    Specify “Oracle Base” Location – leave default value “/u01/app/oracle”

    Specify “Software Location” – leave default value “/u01/app/12.1.0.1/grid”

    Select “Cluster Registry Storage Type” as “Oracle Automatic Storage Management”

    Provide “SYSASM” password – Choose your own password

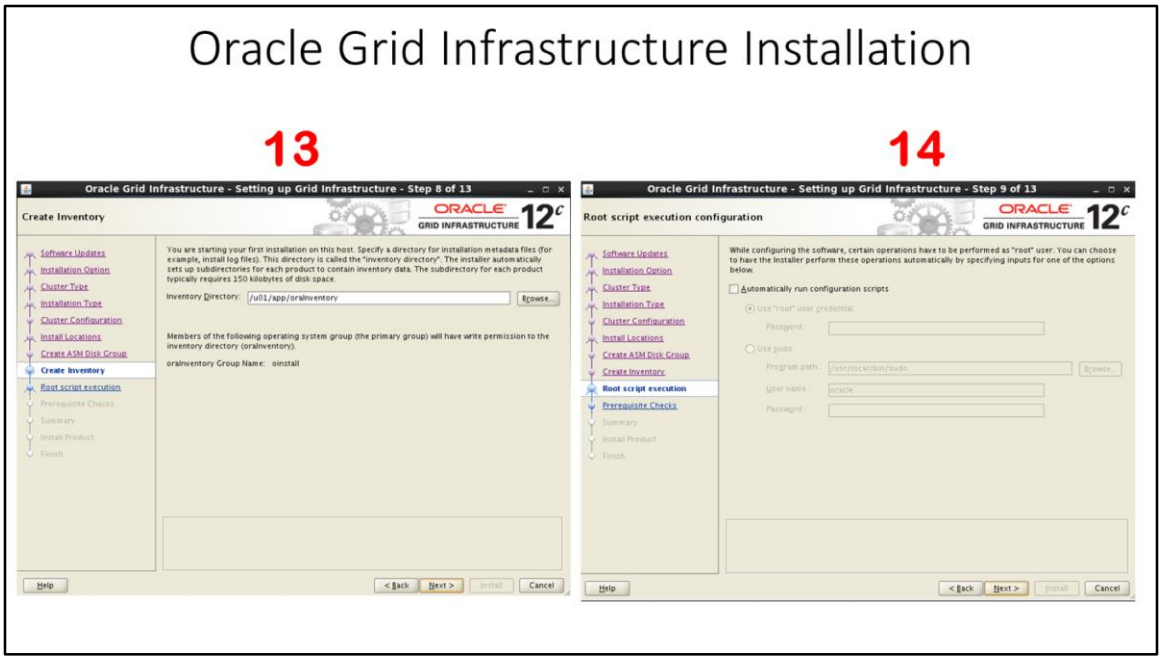
    Select “OSASM group” as “dba”



Oracle Grid Infrastructure Installation

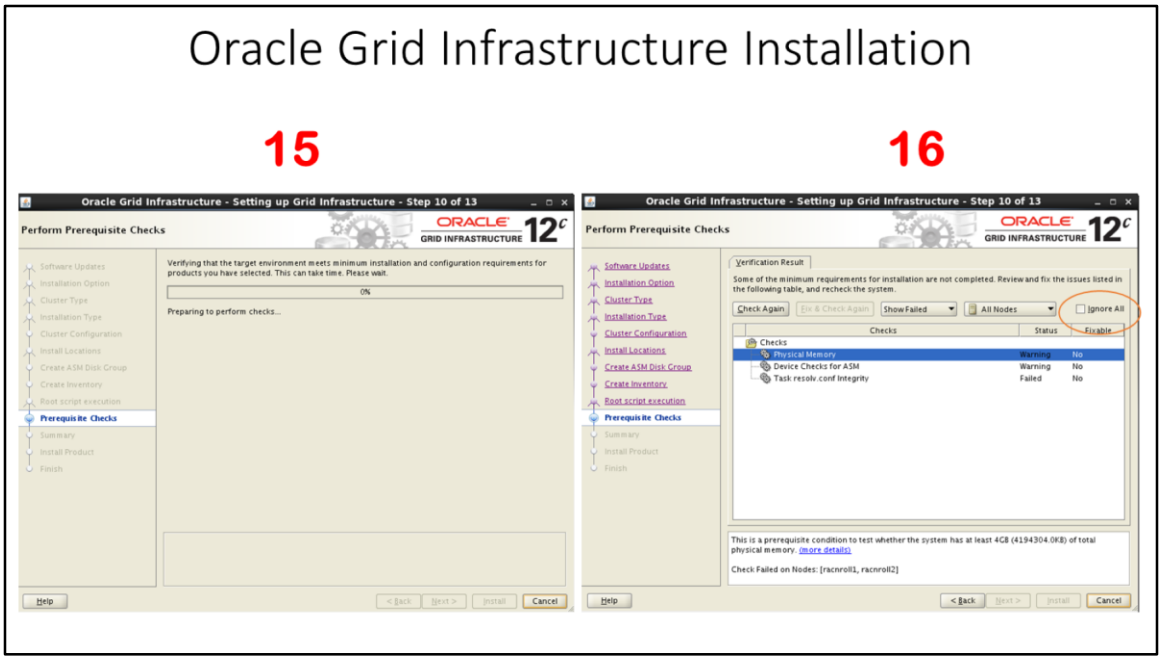
11. Create ASM Disk Group window -
    Click on “Change Discovery Path”
    Provide “Disk Discovery Path” to “/dev/asm*” and Click “Ok”
12. Create ASM Disk Group window -
    Select all disk paths and select “External” redundancy and click “Next” to proceed.

NOTE: The number of voting disks that will be created depend on the redundancy level you specify:
EXTERNAL will create 1 voting disk, NORMAL will create 3 voting disks, HIGH will create 5 voting disks.


Oracle Grid Infrastructure Installation
13
Oracle Grid Infrastructure - Setting up Grid Infrastructure - Step 8 of 13
Create Inventory
ORACLE GRID INFRASTRUCTURE 12c
Software Updates
Installation Option
Cluster Type
Installation Type
Cluster Configuration
Install Locations
Create ASM Disk Group
Create Inventory
Root script execution
Prerequisite Checks
Summary
Install Product
Finish
You are starting your first installation on this host. Specify a directory for installation metadata files (for example, install log files). This directory is called the "inventory directory". The installer automatically sets up subdirectories for each product to contain inventory data. The subdirectory for each product typically requires 150 kilobytes of disk space.
Inventory Directory: /u01/app/oraInventory
Browse...
Members of the following operating system group (the primary group) will have write permission to the inventory directory (oraInventory).
oraInventory Group Name: oinstall
Help
< Back
Next >
Install
Cancel
14
Oracle Grid Infrastructure - Setting up Grid Infrastructure - Step 9 of 13
Root script execution configuration
ORACLE GRID INFRASTRUCTURE 12c
Software Updates
Installation Option
Cluster Type
Installation Type
Cluster Configuration
Install Locations
Create ASM Disk Group
Create Inventory
Root script execution
Prerequisite Checks
Summary
Install Product
Finish
While configuring the software, certain operations have to be performed as "root" user. You can choose to have the Installer perform these operations automatically by specifying inputs for one of the options below.
Automatically run configuration scripts
Use "root" user credential
Password:
Use sudo
Program path: /usr/local/bin/sudo
Browse...
User name: oracle
Password:
Help
< Back
Next >
Install
Cancel

Oracle Grid Infrastructure Installation

13. Create Inventory window –
Choose Inventory Directory – by default you can see "/u01/app/oraInventory" and click "Next" to continue.
14. Root script execution configuration window –
Ignore this step click "Next" to continue.



Oracle Grid Infrastructure Installation

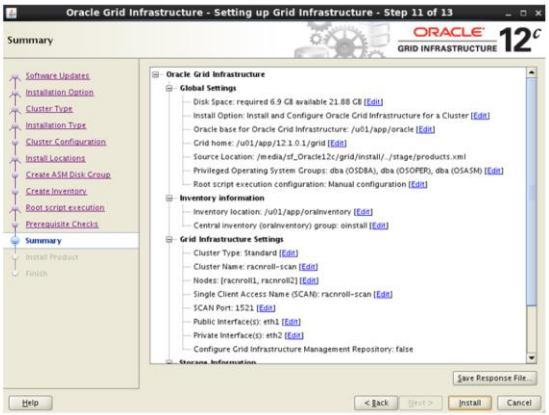
15. Perform Prerequisite Checks window –
    This screen takes some time to validate the pre requisites
16. Perform Prerequisite Checks window –

Install packages that might be missing and correct all other failed checks. If you are sure that the proper
configuration is in place for a successful installation, the unsuccessful checks can be ignored. Tick the box
'Ignore All' before you click ' Next> ‘

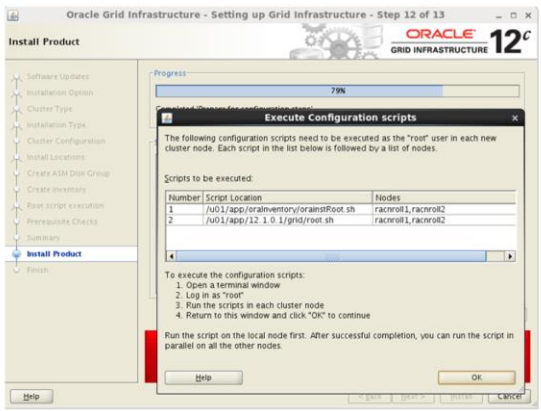
You can ignore these warning as shown above and click on “Ignore All” and click “Next” to continue.

Oracle Grid Infrastructure Installation

17

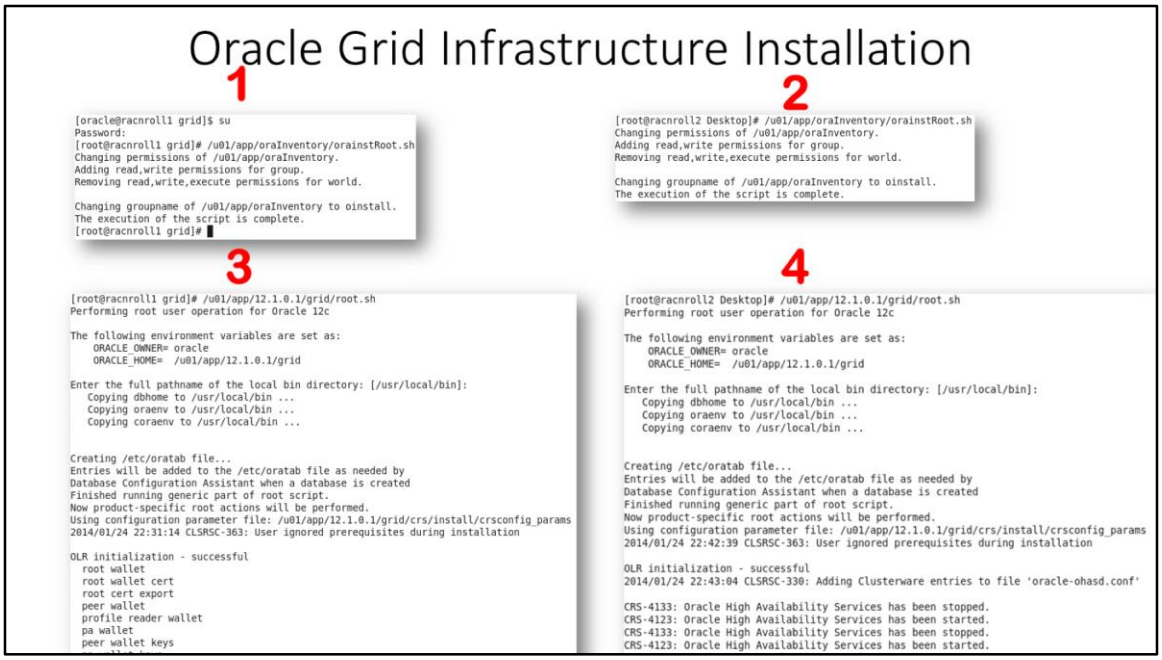

Oracle Grid Infrastructure - Setting up Grid Infrastructure - Step 11 of 13
Summary
ORACLE GRID INFRASTRUCTURE 12c
Software Updates
Installation Option
Cluster Type
Installation Type
Cluster Configuration
Install Locations
Create ASM Disk Group
Create Inventory
Root script execution
Prerequisite Checks
Summary
Install Product
Finish
Oracle Grid Infrastructure
Global Settings
Disk Space: required 6.9 GB available 21.88 GB [Edit]
Install Option: Install and Configure Oracle Grid Infrastructure for a Cluster [Edit]
Oracle base for Oracle Grid Infrastructure: /u01/app/oracle [Edit]
Grid home: /u01/app/12.1.0.1/grid [Edit]
Source Location: /media/sf_Oracle12c/grid/install/../stage/products.xml
Privileged Operating System Groups: dba (OSDBA), dba (OSOPER), dba (OSASM) [Edit]
Root script execution configuration: Manual configuration [Edit]
Inventory information
Inventory location: /u01/app/oraInventory [Edit]
Central inventory (oraInventory) group: oinstall [Edit]
Grid Infrastructure Settings
Cluster Type: Standard [Edit]
Cluster Name: racnroll-scan [Edit]
Nodes: [racnroll1, racnroll2] [Edit]
Single Client Access Name (SCAN): racnroll-scan [Edit]
SCAN Port: 1521 [Edit]
Public Interface(s): eth1 [Edit]
Private Interface(s): eth2 [Edit]
Configure Grid Infrastructure Management Repository: false
Save Response File...
Help
< Back
Next >
Install
Cancel

18


Oracle Grid Infrastructure - Setting up Grid Infrastructure - Step 12 of 13
Install Product
ORACLE GRID INFRASTRUCTURE 12c
Progress
79%
Execute Configuration scripts
The following configuration scripts need to be executed as the "root" user in each new cluster node. Each script in the list below is followed by a list of nodes.
Scripts to be executed:
Number
Script Location
Nodes
1 /u01/app/oraInventory/orainstRoot.sh racnroll1,racnroll2
2 /u01/app/12.1.0.1/grid/root.sh racnroll1,racnroll2
To execute the configuration scripts:
1. Open a terminal window
2. Log in as "root"
3. Run the scripts in each cluster node
4. Return to this window and click "OK" to continue
Run the script on the local node first. After successful completion, you can run the script in parallel on all the other nodes.
Help
OK
Install Product
Help
Cancel

Oracle Grid Infrastructure Installation

17. Summary window –
    Click “Next” to continue
18. Install Product window –
    Execute Configuration scripts window popup window will appear.


Oracle Grid Infrastructure Installation
1
[oracle@racnroll1 grid]$ su
Password:
[root@racnroll1 grid]# /u01/app/oraInventory/orainstRoot.sh
Changing permissions of /u01/app/oraInventory.
Adding read,write permissions for group.
Removing read,write,execute permissions for world.
Changing groupname of /u01/app/oraInventory to oinstall.
The execution of the script is complete.
[root@racnroll1 grid]#
2
[root@racnroll2 Desktop]# /u01/app/oraInventory/orainstRoot.sh
Changing permissions of /u01/app/oraInventory.
Adding read,write permissions for group.
Removing read,write,execute permissions for world.
Changing groupname of /u01/app/oraInventory to oinstall.
The execution of the script is complete.
3
[root@racnroll1 grid]# /u01/app/12.1.0.1/grid/root.sh
Performing root user operation for Oracle 12c
The following environment variables are set as:
ORACLE_OWNER= oracle
ORACLE_HOME= /u01/app/12.1.0.1/grid
Enter the full pathname of the local bin directory: [/usr/local/bin]:
Copying dbhome to /usr/local/bin ...
Copying oraenv to /usr/local/bin ...
Copying coraenv to /usr/local/bin ...
Creating /etc/oratab file...
Entries will be added to the /etc/oratab file as needed by
Database Configuration Assistant when a database is created
Finished running generic part of root script.
Now product-specific root actions will be performed.
Using configuration parameter file: /u01/app/12.1.0.1/grid/crs/install/crsconfig_params
2014/01/24 22:31:14 CLSRSC-363: User ignored prerequisites during installation
OLR initialization - successful
root wallet
root wallet cert
root cert export
peer wallet
profile reader wallet
pa wallet
peer wallet keys
4
[root@racnroll2 Desktop]# /u01/app/12.1.0.1/grid/root.sh
Performing root user operation for Oracle 12c
The following environment variables are set as:
ORACLE_OWNER= oracle
ORACLE_HOME= /u01/app/12.1.0.1/grid
Enter the full pathname of the local bin directory: [/usr/local/bin]:
Copying dbhome to /usr/local/bin ...
Copying oraenv to /usr/local/bin ...
Copying coraenv to /usr/local/bin ...
Creating /etc/oratab file...
Entries will be added to the /etc/oratab file as needed by
Database Configuration Assistant when a database is created
Finished running generic part of root script.
Now product-specific root actions will be performed.
Using configuration parameter file: /u01/app/12.1.0.1/grid/crs/install/crsconfig_params
2014/01/24 22:42:39 CLSRSC-363: User ignored prerequisites during installation
OLR initialization - successful
2014/01/24 22:43:04 CLSRSC-330: Adding Clusterware entries to file 'oracle-ohasd.conf'
CRS-4133: Oracle High Availability Services has been stopped.
CRS-4123: Oracle High Availability Services has been started.
CRS-4133: Oracle High Availability Services has been stopped.
CRS-4123: Oracle High Availability Services has been started.

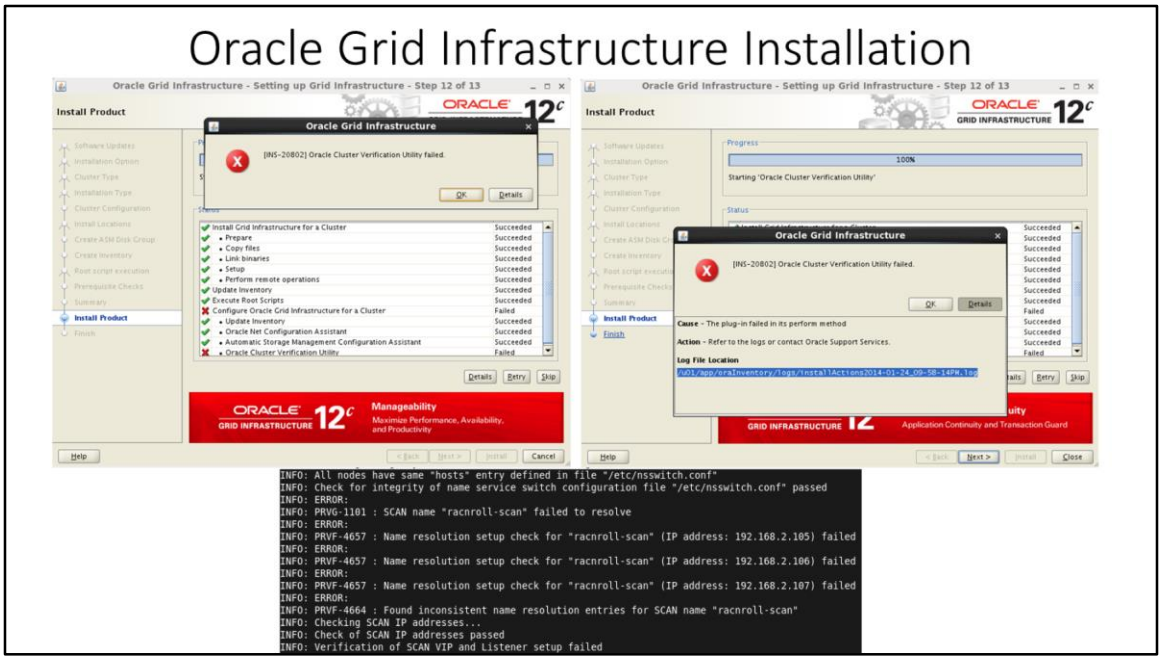
Oracle Grid Infrastructure Installation

Execute Configuration scripts

1 . Login as root user to “racnroll1” VM terminal and execute “/u01/app/oraInventory/orainstRoot.sh” script.

2. After completion of step 1, execute same script in second node i.e. “racnroll2” VM
3. After completion of Step2, come to first node i.e. “racnroll1” VM and execute “/u01/app/12.1.0.1/grid/root.sh
4. After completion of step 3, execute same script in second node i.e. “racnroll2” VM

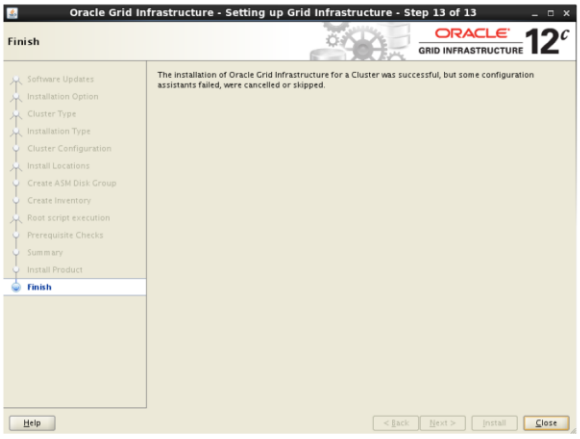
Click “ok” in Execute Configuration scripts window

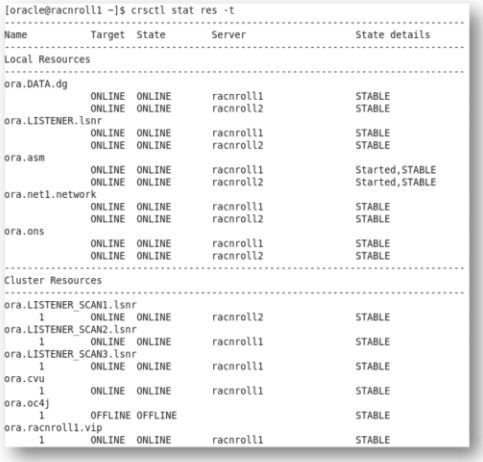

Oracle Grid Infrastructure Installation
Oracle Grid Infrastructure - Setting up Grid Infrastructure - Step 12 of 13
Install Product
Oracle Grid Infrastructure
[INS-20802] Oracle Cluster Verification Utility failed.
OK
Details
Manageability
Maximize Performance, Availability, and Productivity
Cause - The plug-in failed in its perform method
Action - Refer to the logs or contact Oracle Support Services.
Log File Location
Application Continuity and Transaction Guard
INFO: All nodes have same "hosts" entry defined in file "/etc/nsswitch.conf"
INFO: Check for integrity of name service switch configuration file "/etc/nsswitch.conf" passed
INFO: ERROR:
INFO: PRVG-1101 : SCAN name "racnroll-scan" failed to resolve
INFO: ERROR:
INFO: PRVF-4657 : Name resolution setup check for "racnroll-scan" (IP address: 192.168.2.105) failed
INFO: ERROR:
INFO: PRVF-4657 : Name resolution setup check for "racnroll-scan" (IP address: 192.168.2.106) failed
INFO: ERROR:
INFO: PRVF-4657 : Name resolution setup check for "racnroll-scan" (IP address: 192.168.2.107) failed
INFO: ERROR:
INFO: PRVF-4664 : Found inconsistent name resolution entries for SCAN name "racnroll-scan"
INFO: Checking SCAN IP addresses...
INFO: Check of SCAN IP addresses passed
INFO: Verification of SCAN VIP and Listener setup failed

Oracle Grid Infrastructure Installation

Oracle Cluster Verification Utility fail with above error at this step, since we are not using DNS, you can expect this error. Please ignore this error.

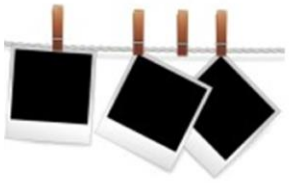
Oracle Grid Infrastructure Installation





Oracle Grid Infrastructure Installation

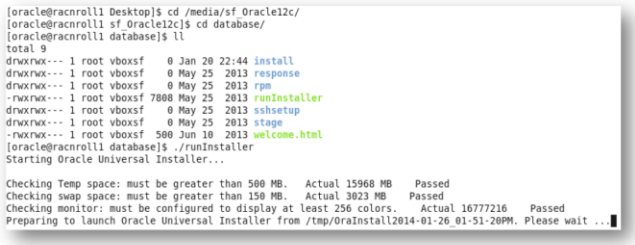
You should see the confirmation that installation of the Grid Infrastructure was successful. Click 'Close' to finish the install..
Check cluster status using “crsctl stat res –t”



Good practice to take the snapshot of the both VMs at this point

Oracle Database Software Installation

Oracle Database Software Installation


[oracle@racnroll1 Desktop]$ cd /media/sf_Oracle12c/
[oracle@racnroll1 sf_Oracle12c]$ cd database/
[oracle@racnroll1 database]$ ll
total 9
drwxrwx--- 1 root vboxsf   0 Jan 20 22:44 install
drwxrwx--- 1 root vboxsf   0 May 25 2013 response
drwxrwx--- 1 root vboxsf   0 May 25 2013 rpm
-rwxrwx--- 1 root vboxsf 7808 May 25 2013 runInstaller
drwxrwx--- 1 root vboxsf   0 May 25 2013 sshsetup
drwxrwx--- 1 root vboxsf   0 May 25 2013 stage
-rwxrwx--- 1 root vboxsf 500 Jun 10 2013 welcome.html
[oracle@racnroll1 database]$ ./runInstaller
Starting Oracle Universal Installer...
Checking Temp space: must be greater than 500 MB.   Actual 15968 MB   Passed
Checking swap space: must be greater than 150 MB.   Actual 3023 MB   Passed
Checking monitor: must be configured to display at least 256 colors.   Actual 16777216   Passed
Preparing to launch Oracle Universal Installer from /tmp/OraInstall2014-01-26_01-51-20PM. Please wait ...

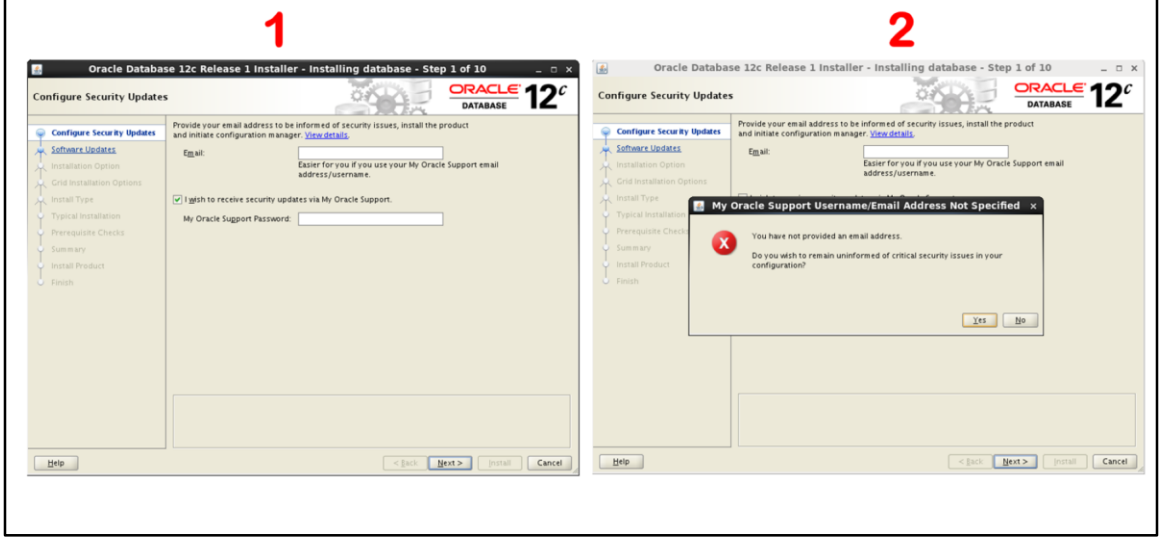
Oracle Database Software Installation
As the oracle user (rdbms software owner) start the installer by running "runInstaller" from the staged installation media.

NOTE: Be sure the installer is run as the intended software owner, the only supported method to change the
software owner is to reinstall.

#su - oracle

change into the directory where you staged the RDBMS software

Oracle Database Software Installation

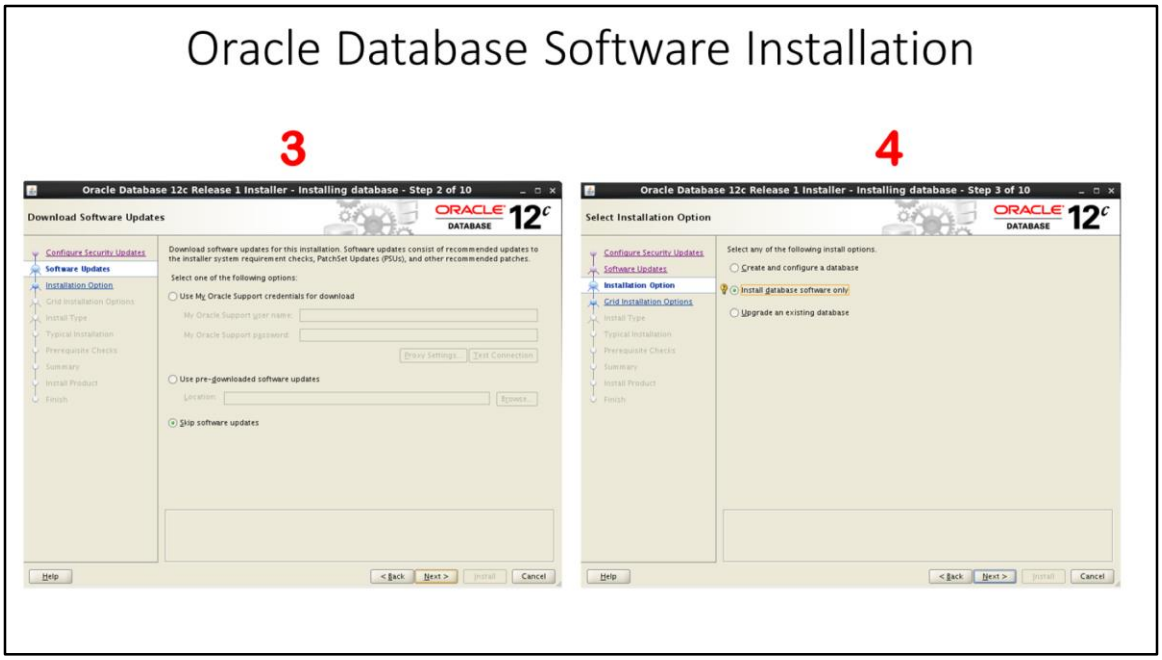

1
2
Oracle Database 12c Release 1 Installer - Installing database - Step 1 of 10
Configure Security Updates
ORACLE 12c
DATABASE
Configure Security Updates
Software Updates
Installation Option
Grid Installation Options
Install Type
Typical Installation
Prerequisite Checks
Summary
Install Product
Finish
Provide your email address to be informed of security issues, install the product and initiate configuration manager. View details.
Email:
Easier for you if you use your My Oracle Support email address/username.
I wish to receive security updates via My Oracle Support.
My Oracle Support Password:
Help
< Back
Next >
Install
Cancel
My Oracle Support Username/Email Address Not Specified
You have not provided an email address.
Do you wish to remain uninformed of critical security issues in your configuration?
Yes
No

Oracle Database Software Installation

Provide your e-mail address, tick the check box and provide your Oracle Support Password if you want to
receive Security Updates from Oracle Support and click ' Next> '

1. Configure Security Updates window –
   Since it is not Production environment, Un check "I wish to receive security updates via My Oracle Support" and click "Next" to continue.

2. Press "Yes" close the popup window and Click "Next" to continue.



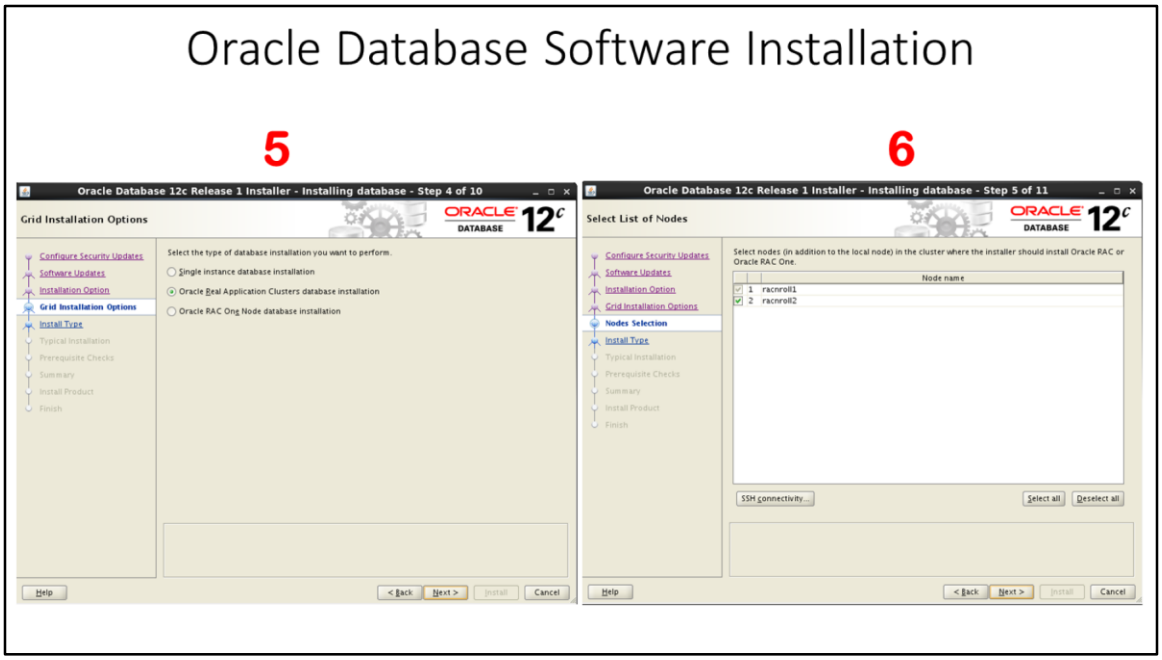
Oracle Database Software Installation

3. Download Software Updates window -

This feature allows the installer to download mandatory patches for itself as well as for the base
product at installation time so that they do not need to be applied later. It also helps resolve installation issues
at the middle of a release without either re cutting the media or deferring the bug fix to a later release.

“Skip Software updates” and Click “Next” to continue.

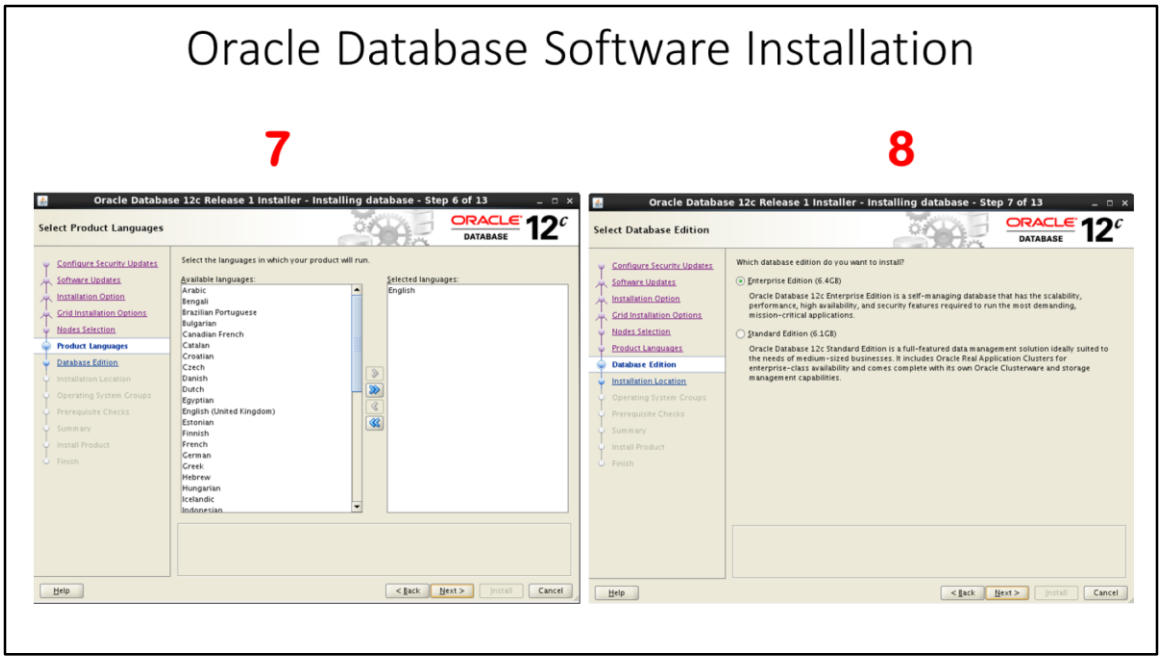
4. Select Installation Option window –
“Install database software only” and Click “Next” to continue.


Oracle Database Software Installation
5
6
Oracle Database 12c Release 1 Installer - Installing database - Step 4 of 10
Grid Installation Options
Select the type of database installation you want to perform.
Single instance database installation
Oracle Real Application Clusters database installation
Oracle RAC One Node database installation
Oracle Database 12c Release 1 Installer - Installing database - Step 5 of 11
Select List of Nodes
Select nodes (in addition to the local node) in the cluster where the installer should install Oracle RAC or Oracle RAC One.
Node name
racnroll1
racnroll2
SSH connectivity...
Select all
Deselect all

Oracle Database Software Installation

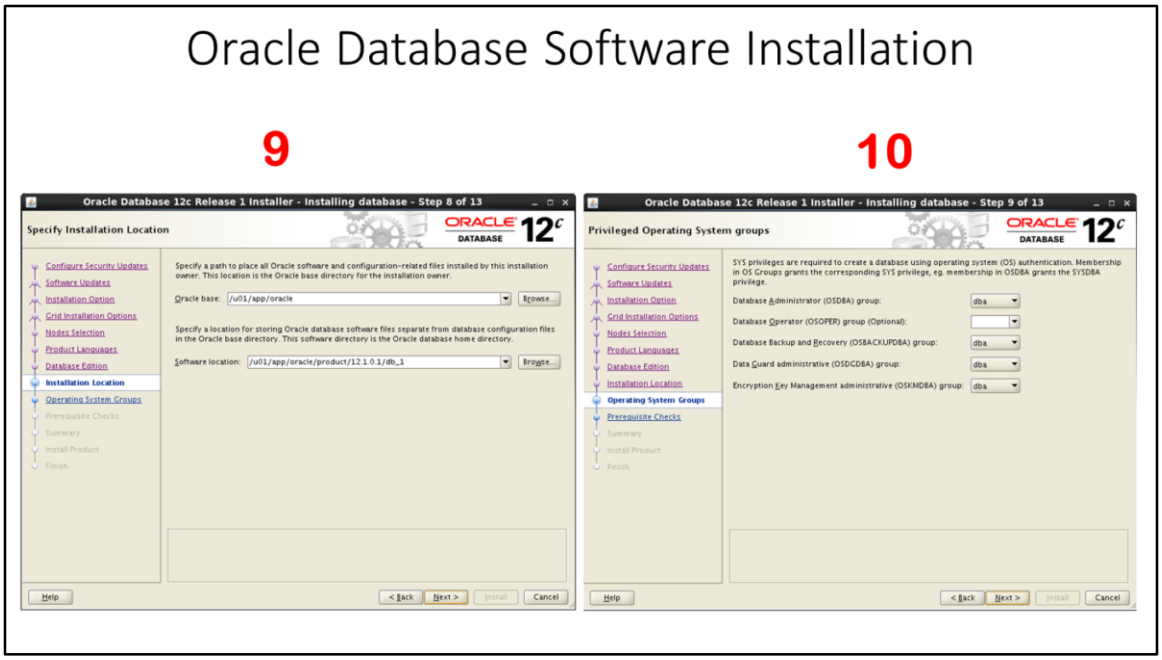
5. Choose “Grid installation Option”, Since we are installing Oracle RAC, choose “Oracle Real Application Clusters Database Installation” and click “next to continue.
6. List of nodes will be displayed in this screen, you can choose appropriate nodes, since we have only two nodes, we can choose both the nodes and click “next to continue.

Oracle Database Software Installation



Oracle Database Software Installation

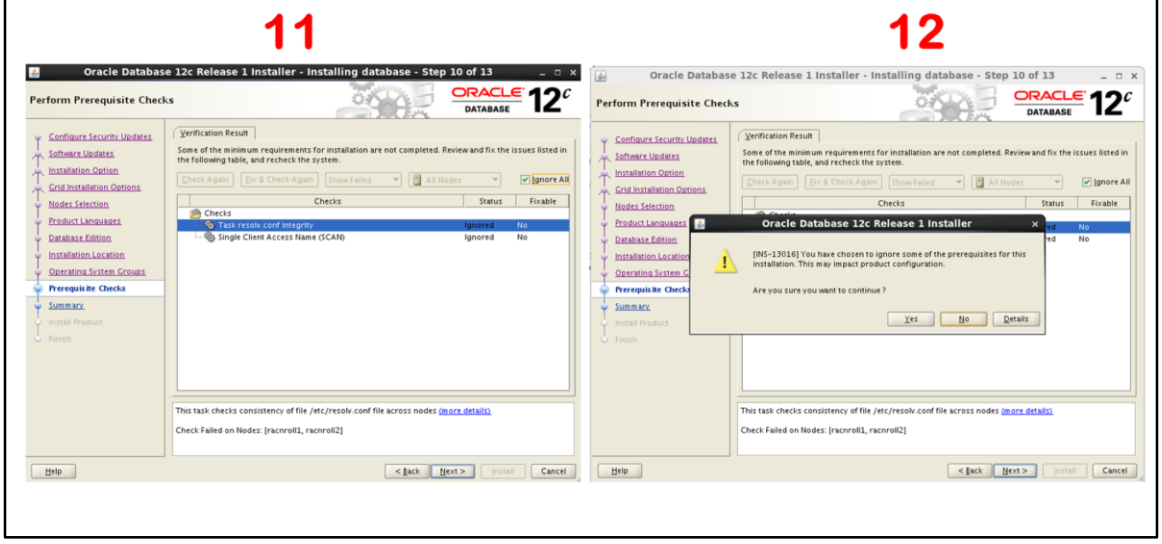
7. By default “English” is product language, you can choose more product languages appropriately if required. In this example, we are only selecting “English”. Click “Next” to continue.
8. You can select database edition depending on your choice, in this example the default option is “Enterprise Edition”. Click “Next” to continue.


Oracle Database Software Installation
9
10
Oracle Database 12c Release 1 Installer - Installing database - Step 8 of 13
Specify Installation Location
ORACLE DATABASE 12c
Configure Security Updates
Software Updates
Installation Option
Grid Installation Options
Nodes Selection
Product Languages
Database Edition
Installation Location
Operating System Groups
Prerequisite Checks
Summary
Install Product
Finish
Specify a path to place all Oracle software and configuration-related files installed by this installation owner. This location is the Oracle base directory for the installation owner.
Oracle base: /u01/app/oracle
Browse...
Specify a location for storing Oracle database software files separate from database configuration files in the Oracle base directory. This software directory is the Oracle database home directory.
Software location: /u01/app/oracle/product/12.1.0.1/db_1
Browse...
Help
< Back
Next >
Install
Cancel
Oracle Database 12c Release 1 Installer - Installing database - Step 9 of 13
Privileged Operating System groups
ORACLE DATABASE 12c
Configure Security Updates
Software Updates
Installation Option
Grid Installation Options
Nodes Selection
Product Languages
Database Edition
Installation Location
Operating System Groups
Prerequisite Checks
Summary
Install Product
Finish
SYS privileges are required to create a database using operating system (OS) authentication. Membership in OS Groups grants the corresponding SYS privilege, eg. membership in OSDBA grants the SYSDBA privilege.
Database Administrator (OSDBA) group: dba
Database Operator (OSOPER) group (Optional):
Database Backup and Recovery (OSBACKUPDBA) group: dba
Data Guard administrative (OSDGDBA) group: dba
Encryption Key Management administrative (OSKMDBA) group: dba
Help
< Back
Next >
Install
Cancel

Oracle Database Software Installation

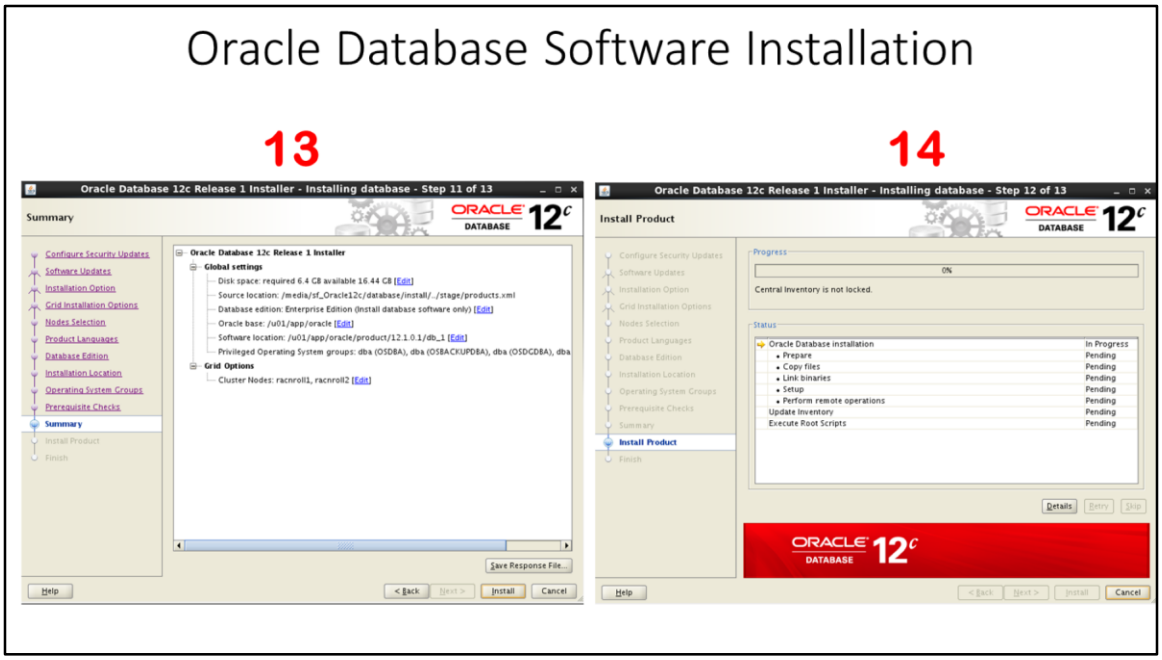
9. Specify Installation location, Since we have already created database installation directories, by default installation will pop up the paths automatically. Click “Next” to continue.
10. “dba” group is the default privileged operating system groups. Click “Next” to continue.

Oracle Database Software Installation



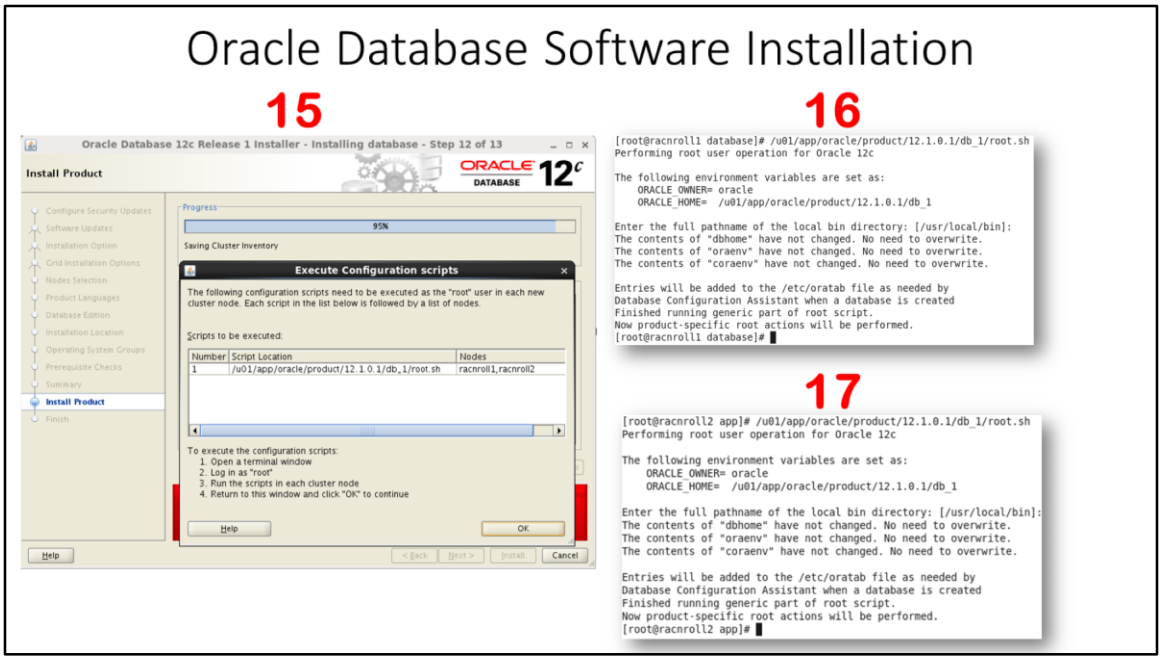
Oracle Database Software Installation

11. You can see warnings/errors in “Perform Prerequisite Checks” window. You can ignore these two errors, which are related to SCAN. Click “Next” to continue.
12. Press “Yes” continue.


Oracle Database Software Installation
13
14
Oracle Database 12c Release 1 Installer - Installing database - Step 11 of 13
Summary
Oracle Database 12c Release 1 Installer - Installing database - Step 12 of 13
Install Product

Oracle Database Software Installation

13. “Summary” window – Oracle Database software is ready to install now, you can click “Install” to start the installation.
14. “Install Product” window – you can see the progress of installation. Click “Details” to see the detailed log.


Oracle Database Software Installation
15
Oracle Database 12c Release 1 Installer - Installing database - Step 12 of 13
Install Product
ORACLE DATABASE 12c
Progress
95%
Saving Cluster Inventory
Execute Configuration scripts
The following configuration scripts need to be executed as the "root" user in each new cluster node. Each script in the list below is followed by a list of nodes.
Scripts to be executed:
Number
Script Location
Nodes
1
/u01/app/oracle/product/12.1.0.1/db_1/root.sh
racnroll1,racnroll2
To execute the configuration scripts:
1. Open a terminal window
2. Log in as "root"
3. Run the scripts in each cluster node
4. Return to this window and click "OK" to continue
Help
OK
Cancel
16
[root@racnroll1 database]# /u01/app/oracle/product/12.1.0.1/db_1/root.sh
Performing root user operation for Oracle 12c
The following environment variables are set as:
ORACLE_OWNER= oracle
ORACLE_HOME= /u01/app/oracle/product/12.1.0.1/db_1
Enter the full pathname of the local bin directory: [/usr/local/bin]:
The contents of "dbhome" have not changed. No need to overwrite.
The contents of "oraenv" have not changed. No need to overwrite.
The contents of "coraenv" have not changed. No need to overwrite.
Entries will be added to the /etc/oratab file as needed by
Database Configuration Assistant when a database is created
Finished running generic part of root script.
Now product-specific root actions will be performed.
[root@racnroll1 database]#
17
[root@racnroll2 app]# /u01/app/oracle/product/12.1.0.1/db_1/root.sh
Performing root user operation for Oracle 12c
The following environment variables are set as:
ORACLE_OWNER= oracle
ORACLE_HOME= /u01/app/oracle/product/12.1.0.1/db_1
Enter the full pathname of the local bin directory: [/usr/local/bin]:
The contents of "dbhome" have not changed. No need to overwrite.
The contents of "oraenv" have not changed. No need to overwrite.
The contents of "coraenv" have not changed. No need to overwrite.
Entries will be added to the /etc/oratab file as needed by
Database Configuration Assistant when a database is created
Finished running generic part of root script.
Now product-specific root actions will be performed.
[root@racnroll2 app]#

Oracle Database Software Installation

15. “Execute Configuration scripts” window will appear. Execute “root.sh” script in “racnroll1” and then “racnroll2” node respectively. Do not execute in parallel.
16. Executing in first node “racnroll1”
17. Executing in second node “racnroll2”

NOTE: root.sh should be run on one node at a time.

Oracle Database Software Installation

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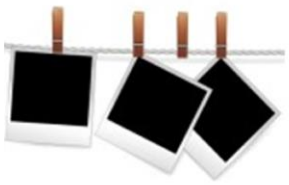
Oracle Database Software Installation

18. Click “Close” the installation.



Good practice to take snapshot of the both VMs at this point

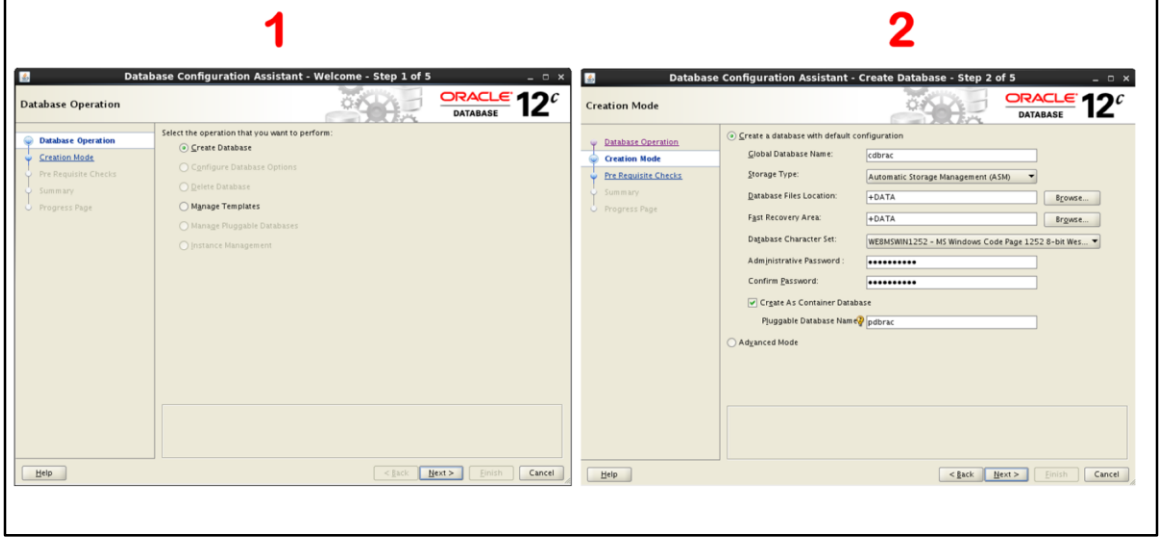
Creating Oracle Database

Creating Oracle Database using dbca

```
[oracle@racnroll1 database]$ echo $ORACLE_HOME
/u01/app/oracle/product/12.1.0.1/db_1
[oracle@racnroll1 database]$ dbca
```

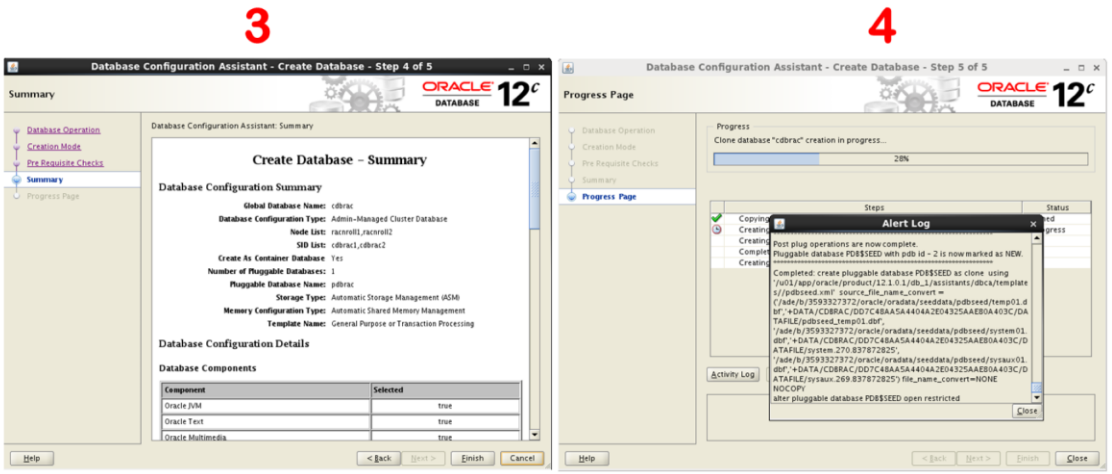
As the oracle user start the Database Configuration Assistant (DBCA)

Creating Oracle Database



1. The Database Operation window appears. Select Create Database. Click **Next**.
2. The Creation Mode window appears. Ensure that Create a database with default configuration is selected. Enter a value in the Global Database Name field. Select **File System** in the Storage Type menu. Accept the default values for Database Files Location and Fast Recovery Area. Enter a password for the SYS and SYSTEM users in the Administrative Password and Confirm Password fields. Click **Next**.

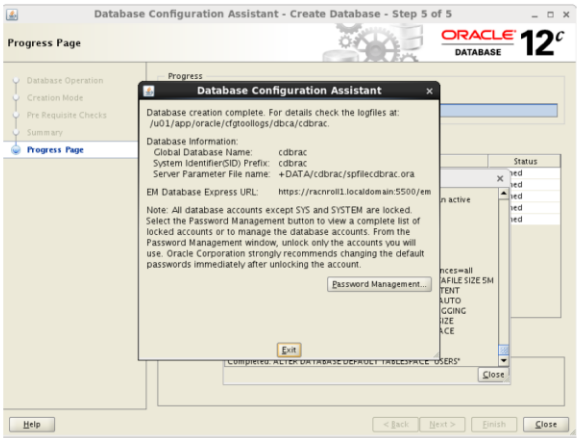
Creating Oracle Database



3. The Summary window appears. Review the information. Click **Finish**.
4. The Progress Page window appears. You can also monitor the database creation progress by selecting “Alert log” as shown above.

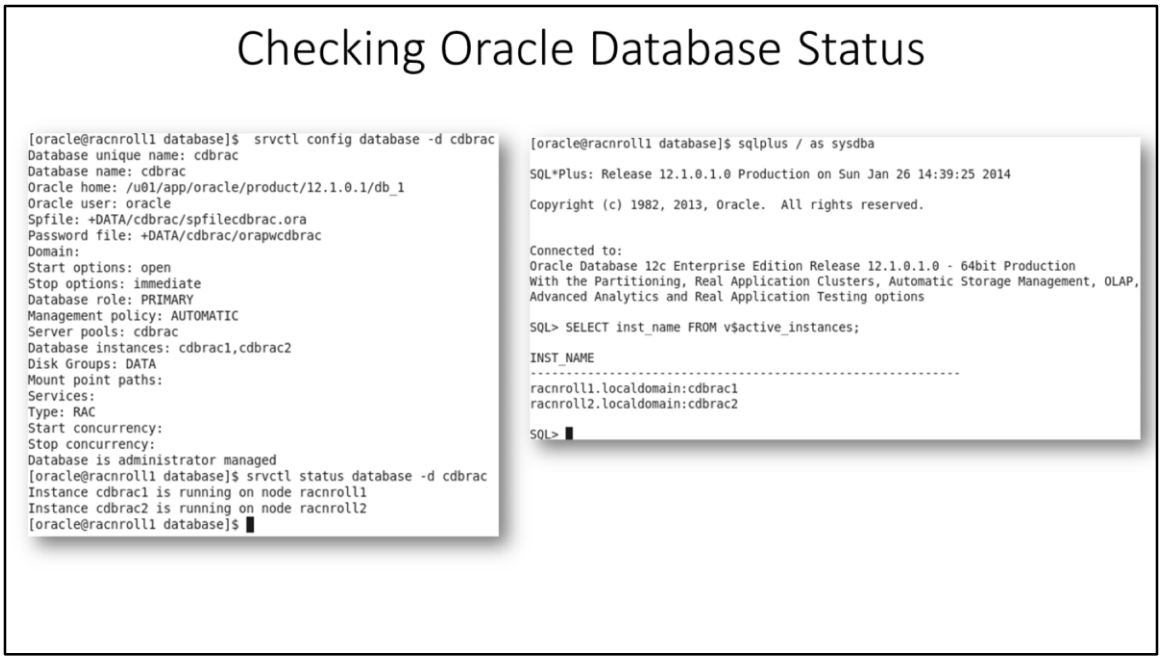
Creating Oracle Database

5


Database Configuration Assistant - Create Database - Step 5 of 5
Progress Page
ORACLE DATABASE 12c
Database Operation
Creation Mode
Pre Requisite Checks
Summary
Progress Page
Progress
Database Configuration Assistant
Database creation complete. For details check the logfiles at:
/u01/app/oracle/cfgtoollogs/dbca/cdbrac.
Database Information:
Global Database Name: cdbrac
System Identifier(SID) Prefix: cdbrac
Server Parameter File name: +DATA/cdbrac/spfilecdbrac.ora
EM Database Express URL: https://racnroll1.localdomain:5500/em
Note: All database accounts except SYS and SYSTEM are locked.
Select the Password Management button to view a complete list of
locked accounts or to manage the database accounts. From the
Password Management window, unlock only the accounts you will
use. Oracle Corporation strongly recommends changing the default
passwords immediately after unlocking the account.
Password Management...
Exit
Status
Close
Help
< Back
Next >
Finish
Close

5. The Database Configuration Assistant window appears indicating that the database has been successfully created. You can click Password Management to unlock the user accounts or you can perform this task at a later time. Click **Exit** to close the window.

The Progress Page window reappears indicating that the database creation is complete. Click **Close** to close the window and exit DBCA.



Checking Oracle Database Status

Using “srvctl” command to check the status of Oracle RAC database.
You can also query “v$active_instances” table to check the status of Oracle RAC database.

References

THANK YOU
Obrigado
Danke
Merci
Gracias
Dziękuję
Спасибо
Multumesc
Mahalo
Koszönöm
arigato
Takk
Paxмет
Prasom

END OF

RAC
'N'
ROLL